

M&A Synergy Valuation: a Proposed
Real Options Approach for evaluating
Synergies within the "GrandVision -
EssilorLuxottica" Case Study

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INTRODUCTION

The quantity and size of M&A (merger and acquisition) transactions has increased significantly in the last years, especially in the post-pandemic period from Covid-19 due to the consolidation processes that have been undertaken. As a result, the professional and academic interest in M&As has sharply increased, also due to several benefits generated by such deals.

In light of these considerations, the presented Thesis centres its focus on M&A and the synergies that such deals are able to generate. Particularly, the aim of this Thesis is to demonstrate the usability of the real options approach for evaluating the synergies of M&A deals, by answering the following research question: “Are real options a suitable valuation approach for assessing M&A synergies in uncertain deals?”.

Due to the uncertain nature of synergies, in fact, traditional valuation methods, such as the Discount Cash Flow (DCF) method and the multiples approach, are not faultless methods since they fail in capturing the full value of M&A synergies as they do not consider elements of uncertainty. Therefore, recent literature suggests to apply real option valuation method when valuing M&A synergies due to its ability to capture the risks and benefits of uncertainties associated with deals. In this vein, the theory concerning real options will be explored, outlining the application areas, the different types of options and the main methods for valuing real options (Black-Scholes-Merton Model, Binomial Lattices, Monte Carlo Simulation, etc.). A framework for the evaluation of M&A synergies through real options will be presented, as well as the method that will be considered as the model for the valuation of the case study transaction.

In detail, the Thesis will provide an introductory chapter focused on the overview of M&As, in which an outline of the main topic will be described to enhance a better understating of the case study. Hence, this chapter will present a definition of mergers and acquisitions, discuss the main steps in the M&A transaction process, as well as the primary motivations behind the success or failure of these kinds of deals. The first chapter will further analyses the main historical trends that have shaped the M&A environment and the actual landscape, which results useful for understanding the context within which the case study examined is grafted.

Then, in the second chapter, approaches to evaluating M&A transactions will be addressed. As suggested by Professor Damodaran, considering the total value of an M&A deal to be the sum of the (i) target’s stand-alone value, (ii) the value of synergies, and (iii) the value of change in control, an explanation of the major valuation approaches will be outlined. In particular, both traditional and more innovative methods are illustrated in this chapter. Among the latter, the real options method, which will be employed in the evaluation process of the third chapter, assumes particular relevance.

Finally, the last chapter is dedicated to the evaluation of the selected case study, which relates to the cross-border acquisition of GrandVision by the leading eyewear and eyecare group EssilorLuxottica. Hence, the model described in the previous chapter will be dropped into the specific case of the GrandVision acquisition. Here, in this part of the Thesis, the real options – and in particular the Datar-

Mathews method – will be applied for the assessment of the specific synergies. Lastly, the final part of the Thesis will be devoted to discussion of the results reached and analysis of the main contributions to research on M&A deal evaluation.

CHAPTER I

Mergers & Acquisitions: Motives, Process and Environment

Growth is the ideal goal of nearly all the corporations, regardless of their business area or size. In many cases, the purpose of corporate growth is achieved organically, by adopting a strategy of internal growth or diversification. Organic growth occurs when an enterprise builds its own structure and sets up its own manufacturing, distribution, and dealing networks or erects an ecosystem, without impacting the commercial structure or the business model of its own. However, organic growth is often difficult to accomplish and takes considerable time to fully attain.

Hence, companies sometimes choose to meet the same growth objectives through M&As (mergers and acquisitions), which allow exponential and faster growth rates. Unlike organic growth, M&A is a form of brownfield investment, which allows a corporation to strategically expand its business, investing in an industry or sector already established. M&A deals, widely used since the 1990s, have become an integral part of corporate frugality and diurnal business captions, increasingly attracting new investors and business players. The quantity and size of M&A deals has indeed increased significantly in the last years, especially in the post-pandemic period from Covid-19. As a result, the professional and academic interest in M&A has sharply increased.

This chapter aims to provide an overview of such deals. Specifically, it will be provided a definition of mergers and acquisitions, also presenting an insight into the different types of deals. The various stages of the M&A deal cycle will also be discussed, from the acquisition/merger strategy planning and target screening to due diligence, transaction execution and post-acquisition integration process.

Moreover, the business motivations for M&As and the trends of these transactions over the years will be analysed, stressing the benefits generated by mergers and acquisitions to firms. An explanation will be provided about how M&A activity allows companies to quickly add resources and/or capabilities to enhance their competitive position. At this stage, the principal reasons to carry out M&A deals will be discussed: (i) entering new markets, (ii) realizing economies of scale and scope, (iii) vertical integration, (iv) accessing to critical resources and technological know-how, (v) increasing market power, (vi) diversification, (vii) managerial self-interest and (viii) creating a tax efficient structure.

Among these, probably the most relevant is the creation of operational and financial synergies, which usually represents the main motive for executing M&A deals.

Later in this chapter, the main reasons for the failure of M&A transactions will also be examined. Side by side, this part of the first chapter will also present the key success factors for a merger or acquisition, according to surveys conducted by some of the top-recognised firms.

The last section of the chapter will then be dedicated to the current M&A environment, providing an overview of the trends – in terms of number and value – of mergers and acquisitions over the years, both

in global and Italian context. Finally, an explanation of the future trends affecting the M&A world will be outlined.

1.1 Brief Description of Mergers and Acquisitions

To gain a full understanding of the M&A phenomenon, it is first of all worthwhile to provide a definition of mergers and acquisition. This Section will introduce the core characteristics of M&A deals along with the relevant classifications into which they can be distinguished.

Mergers and acquisitions (M&A) are part of what is often referred to as *the market of corporate control* (Berk, & DeMarzo, 2020) and consist in extraordinary corporate transactions that lead to the *merger* of two or more companies into a new legal entity or the *acquisition* of one company by another. M&A activity facilitates the achievement of the growth objective, which is difficult to reach by internal means, increasing revenues. Often, these transactions also allow the elimination of competition in the same industry, leading to industry consolidation, and – especially for SMEs – the achievement of a sufficient size to resist and be more competitive on the market in the mid-to-long term.

From this brief explanation, it is clear that M&As aim to increase the business strength and value of a company, enabling it to diversify activities into new markets, improve market share and expand geographically. Through M&As, companies can aim for a faster pace of growth, referred as to *inorganic growth*, acquiring or merging with another enterprise.

M&A deals generally share some common traits, such as a change in the ownership structure of the companies involved and the participation of some main players. In particular, M&As commonly involve the following parties:

- *target company*: company being acquired;
- *industrial buyer*: company executing the acquisition;
- *financial buyer*: a financial entity that joins the target company's capital;
- *advisor*: entity offering professional support in the buy-side or sell-side deal process.

In both mergers and acquisitions, the acquiring entity must purchase the share or the assets of the target company with cash or its equivalent (e.g. shares in the acquiring or in the *Newco*¹).

The *de facto* differences between the two terms have slowly flattened out over the years by considering M&A deals together as external growth processes aimed at creating synergies and being competitive in an increasingly globalised market. This is mainly due to the fact that a true merger of equals, i.e. a merger performed by two companies of the same size, is extremely rare since one party is almost always larger or more powerful than the other.

¹ The word “Newco” is an abbreviation of the term “New Company” and is used to refer to all newly established companies resulting from a start-up, spin-off, corporate restructuring or M&A activity.

It is also worth noting that M&A is a more neutral world that is generally well received by shareholders, employees or directors. For these reasons, the concept of “M&A” is slowly replacing the individual terms “merger” and “acquisition”.

This Section presents mergers and acquisitions individually, outlining the categories into which they can be classified.

1.1.1 Mergers

A merger is the transaction by which two or more companies combine into one. It is carried out through an agreement that is intended to merge the previously distinct companies – usually of about the same dimensions (*merger of equals*) – into a single new company, with the purpose of creating a stronger and more solid entity. Typically, this can occur in two forms:

- *merger by creation*;
- *merger by absorption*.

A *merger by creation* implies that the original companies are merged into a new company, losing their own legal personality. The companies involved in the merger are dissolved and their assets are transferred to a purpose-built company (*newco*), legally separate from the former ones. In contrast, a *merger by absorption* is a form of merger in which one or several companies are merged into one already existing entity. As a result of the merger, the incorporated company ceases to exist legally, while the absorbing company continues to retain its legal personality.

Mergers are also classified according to the nature of companies involved and their relative markets. Based on these criteria, a distinction is made between:

- *horizontal merger*;
- *vertical merger*;
- *conglomerate merger*.

In cases in which the acquiring and target companies belong to the same industry, the merger is typically called *horizontal*. By this way, the acquirer reduces the competitive pressure it was subjected to and, in the meanwhile, boosts its dimensional growth. This is why horizontal mergers typically increase the concentration level in the industry. An example of a horizontal merger is the merger of Exxon Corp. and Mobil Corp. – the first and second largest oil producers in the United States – in 1998. Conversely, a merger is *vertical* when involves companies operating at different stages of the same supply chain or production process in order to save time and costs. In other words, a vertical merger occurs when the target’s industry buy or sell to the acquirer’s industry. The rationales behind this type of merger is to secure supplies, especially if they are considered strategic, create synergies, reduce operating costs or cause supply constraints on competitors. Lastly, a *conglomerate* merger is performed by companies operating in different business industries. Thus, conglomerate mergers are mainly aimed at implementing a diversification

process.

In addition, into this classification can also be recognised *co-generic* mergers, which refer to mergers in which two or more companies, involved in a merger transaction, operate in the same business industry and offer different but related products or services (generally, complementary in nature), and *market extension* mergers, whether the companies operate in different markets but offer similar or – in the extreme case – substitute products.

A further distinction can also be drawn according to the geographical area of the merging companies. Based on this classification, it can be identified:

- *domestic merger*, when the companies involved are established in the same country;
- *inbound merger*, when foreign-origin companies merge together;
- *outbound merger*, when a domestic company merges with foreign companies.

Finally, depending on the legal status of the merging companies, two different merger types can also be distinguished in:

- *homogeneous merger*: between limited companies or partnership companies;
- *heterogeneous merger*: between a limited company and a partnership company.

Table 1.1 summarises all the different categories of mergers. The first column presents the characteristics of the merging companies, upon which the various categories of merger transactions are based (second column).

Table 1.1 – Classifying Mergers

Characteristic of companies involved	Categories
Merger pattern	<ul style="list-style-type: none"> - by creation - by absorption
Industry	<ul style="list-style-type: none"> - horizontal - vertical - conglomerate - co-generic - market extension
Geography	<ul style="list-style-type: none"> - domestic - inbound - outbound
Legal status	<ul style="list-style-type: none"> - homogeneous - heterogeneous

Source: *Own creation*

1.1.2 Acquisitions

An acquisition is the shift in ownership of a company – or parts of it – that becomes under the control of another entity, through the purchase of shares (*share deal*) or assets (*asset deal*). As opposed to merger, an acquisition always implies a company transferring control to another. It happens when one company purchases another, and assumes the rights and duties of that.

From a legal standpoint, the target company ceases to exist as a going concern, although it may continue to operate with varying degrees of integration with its new parent company. This means that, upon finalisation of the deal, the acquired company is no longer economically independent while it could maintain its legal independence.

According to the types of financing, acquisition deals can be classified in:

- *Leveraged buy-out (LBO)*: a finance transaction whereby a company is acquired using a significant amount of borrowed money (bond or loans). This type of transaction exploits the debt capacity of the acquired company, since the collateral for the loan consists of the target company's assets;
- *Unleveraged buy-out*: purchase of shares and/or stocks of the target company without any recourse to debt capital.

A further option to distinguish acquisitions is on the basis of the management's provenance. Accordingly, acquisitions are categorised into:

- *Management buy-out (MBO)*: deals whereby the ownership of a company is completely shifted to managers within the company. Such transactions are often launched by managers in order to purchase the sufficient securities available on the market to ensure company's delisting. Through MBOs, managers use their strategic and managerial know-how to improve corporation's efficiency and get it ready for its subsequent sale at a price higher than the purchase price, or for a re-listing;
- *Management buy-in (MBI)*: type of acquisition similar to the previous one but carried out by managers (or group of managers) outside to the company. This type of transaction, aimed at replacing the existing management team, can occur when a company appears to be undervalued on the market, loosely managed, or requires succession;
- *Buy-in management buy-out (BIMBO)*: it is a particular type of company takeover (LBO to be precise) in which management buy-in and management buy-out characteristics are combined. In particular, BIMBOs are undertaken all in unison by internal and outside managers of the company to be acquired and are often used by private equity firms, because existing management team is already familiar with the business, while outside managers have know-how to drive long-term growth.

Acquisitions can also be distinguished depending on whether or not there is consensus to acquisition by target company. In this case, a distinction can be drawn between:

- *friendly takeover*: this kind of acquisition happens when the company acquiring a controlling stake

in the target company gets the board's approval and the cooperation of the company's management;

- *hostile takeover*: conversely, this happens when one company attempts to take control of the target company despite the resistance of that company's management. In order to take control of another company, the acquiring company has to deal with the target's shareholders and offer to buy their shares for a fee. When the acquirer has purchased enough shares to receive a controlling interest, the hostile takeover is successful. Most hostile takeovers happen because the company acquirer wants to reduce competition in the industry, gain access to copyrighted, patented or other proprietary technologies or control access to key resources.

Furthermore, also for acquisition deals, most of the classifications already seen for mergers remain applicable. *Table 1.2* summarises all the different categories of acquisition.

Table 1.2 – Classifying Acquisitions

Characteristic of companies involved	Categories
Financing mode	<ul style="list-style-type: none"> - Leveraged buy-out (LBO) - Unleveraged buy-out (UBO)
Management's provenance	<ul style="list-style-type: none"> - Management buy-out (MBO) - Management buy-in (MBI) - Buy-in management buy-out (BIMBO)
Target's consensus	<ul style="list-style-type: none"> - friendly takeover - hostile takeover
Industry	<ul style="list-style-type: none"> - horizontal - vertical - conglomerate - co-generic - market extension
Geography	<ul style="list-style-type: none"> - domestic - inbound - outbound
Legal status	<ul style="list-style-type: none"> - homogeneous - heterogeneous

Source: *Own creation*

1.2 The Cycle of an M&A Deal

Each M&A deal, whether *buy side* (acquisition) or *sell side* (total or partial sale), can be standardised into a set of more or less structured phases depending on the size of the deal. The process is often lengthy, intense and high-stakes, during which the companies hire the services of an investment bank or a consulting firm in order to ensure the achievement of key objectives and a successful outcome of the deal.

Often, the companies involved in a M&A deal seek the help of their bankers or advisors to conduct a comprehensive financial analysis of the different strategic alternatives available for the target. Once the decision has been made, the advisor is responsible for achieving the optimal balance among various considerations specific to the deal, such as value maximization, speed of execution and certainty of completion for the party. Accordingly, it becomes crucial for the advisor to identify the client's priorities from the outset and devise a tailored process.

From an analytical point of view, the assignment requires the deal team to conduct a thorough valuation of the target using various methodologies. To gauge the potential purchase price that buyers would pay for the target, an accretion or dilution analysis is performed. These valuation analyses help frame the seller's price expectations, establish guidelines for the acceptable bid range, evaluate received offers, and ultimately guide negotiations of the final purchase price. Additionally, for public targets (and certain private targets, depending on the situation), the sell-side advisor, or an additional investment bank, may be asked to provide a fairness opinion (Rosenbaum & Pearl, 2021).

This Section presents the key steps of the process through which companies are bought and sold in the market. All these phases are equally important for a successful deal.

1) *M&A strategy*

The M&A process starts with the definition of the deal's strategic planning. At this stage it is ascertained whether M&As may serve as a vehicle to achieve strategic objectives of the firm. Therefore, defining the strategy is a preparatory phase in which senior corporate leaders and advisors proceed to the analysis of the sector, competition, and value proposition, and to the recognition of the company's weaknesses. In this phase, transaction advisors prepare confidential marketing materials (e.g. teaser and management presentation) in order to introduce the strategy and the different variables to be taken into consideration.

2) *Target screening*

At this stage, the M&A deal team and/or corporate finance advisors move on to identify key acquisition targets that would meet strategy through the application of selection criteria that typically relate to size, marginality, business model, market positioning and future potential, distribution and sales channels, and presence of brands. This phase generally does not apply when the selling and acquiring companies already know the counterparty, while it is fundamental in all other cases.

In order to successfully select suitable companies that can be taken over or which a merger can be executed, the advisor firstly carry out a detailed analysis of the sector, competition and business opportunities. Furthermore, the study of databases and balance sheet analysis is highly relevant, as well as knowledge of key players. This preliminary analysis typically results in lists that can be either *long lists*, i.e. numerically a few dozen names, or *short lists*, typically five to ten companies (Rosenbaum & Pearl, 2021).

3) *Preliminary contacts and preparatory activities*

During this phase, the development of the top-down deal model takes place in order to define the deal ambition and vehicles of value creation. At this stage, it is indispensable to provide the target with an Information Memorandum (*InfoMemo*), including a business plan, and a preliminary evaluation through the multiples method. During this stage, further preliminary information is requested by the other party to the target.

At the same time, a Non-Disclosure Agreement (NDA) is signed, i.e. a confidentiality agreement whereby the parties commit themselves not to transfer confidential data and information received to third parties. This agreement, besides identifying the parties involved and the information to be kept confidential, also include non-solicitation clauses, exclusions from the confidentiality rules and regulation in the event of a breach of the prohibitions laid down.

This stage ends with a Non-Binding Offer (NBO), setting out the main terms of agreement between the seller and the buyer, without committing either party to the continuation or conclusion of the deal. This offer includes the valuation criteria for assessing the sale consideration (e.g. multiples applied), guarantees and governance arrangements relating to the transaction terms of payment, proposed purchase price and timing of the transaction. The NBO is subject to due diligence and, in case the purchase is carried out on a debt basis, also to financing.

4) *Due diligence*

Due diligence involves assessing the target company to establish its value, and allows the buyer (also called the *bidder*) to examine company information and ascertain its reliability. The purpose of due diligence is to verify whether the buyer really intends to proceed with the purchase, assessing the venture from both a strategic and operational perspective, or refuse to negotiate. At this level, financial and transaction services (TS) advisors play a crucial role. Potential inefficiencies and risks of the transaction are looked for, and the integration plan is defined. This phase is also crucial to validate both the qualitative and quantitative fit of the potential target and assumptions of deal model.

According to the client, two types of due diligence can be identified:

- *acquisition due diligence*, when it is the potential buyer that requests due diligence on the target company, typically in a one-to-one negotiation;

- *vendor due diligence*, when it is the target company that orders the due diligence on its accounts, especially when an auction² is set up among several potential buyers interested in the target company, in order to make the sale process more transparent and faster.

Ordinarily, due diligence is carried out by means of checklists to be fulfilled by the target company according to corporate specifications. The main investigation areas of checklists are the financial details of the target and its tax liability. Therefore, we will refer to *financial due diligence* when meaning the analysis of the economic, asset and financial situation of the target firm. In this instance, the core valuation value is EBITDA, which offers a good approximation of profitability, but represents the results of both core business and non-core business operations. Therefore, in such cases a “normalisation” of EBITDA is required, aiming at defining the real value of the firm in the first place. The normalisation consists of purifying the company’s EBITDA of all cost or revenue items that affect this value in a distorting manner, such as non-cash items (stock compensation expense, deferred revenues, pension), non-recurring and unusual items (restructuring activities, legal expenses, insurance proceeds, bad debt), non-operating items (gain or loss on asset sales, foreign currency), changes in business units (acquisition or divestiture, major product launches or cancellations), pro forma adjustments (stand alone costs and public to private costs), and out-of-period revenue and expenses (Deloitte, 2014).

The other common category of due diligence is *tax due diligence*, by which the advisor ascertains that the financial statements and profit and loss accounts comply with the statutory and tax regulations and that they have been drawn up in accordance with proper accounting principles, ensuring that its tax liabilities are paid in full to date. In addition, during tax due diligence, the regularity of the accounting and VAT books, tax returns and any inspections made by tax authorities are ascertained. This process is all the more streamlined the more collateral is put up to support the M&A transaction.

Other types of due diligence that are carried out for merger or acquisition deals are the *business due diligence*, *employment/management due diligence*, *operational due diligence*, *environmental due diligence*, *legal due diligence*, *insurance due diligence*, and *property due diligence*.

5) *Transaction execution and deal structuring*

During the execution of the transaction, the purchasing company seeks to synthesize its due diligence information in order to come to the final design of the transaction. Once due diligence has been completed, the potential purchasing party may choose to abandon the transaction, renegotiate or continue negotiating under the same terms. In the latter case, the parties sign a letter of intent (LOI) which generally confirms the content of the NBO and entails the parties' commitment to conclude the deal.

Among the decisions made at this stage is whether to include assets or shares into the deal structure. When a share purchase takes place, the buyer purchases the shares of a company that runs the business and

²A company takeover generally occurs in two modes, either through a direct purchase from an interested buyer or through an auction launched among all the potential buyers of the target firm.

owns its assets. This means that the buyer does not have direct ownership of the business or its assets but rather indirectly through the company. In contrast, an asset purchase involves buying specific business assets. This approach allows the buyer to exclude any unwanted assets and minimize the risk of unknowingly assuming liabilities associated with the previous business operations. Thus, this phase of the M&A deal lifecycle ends with the formalisation of the Share/Asset Purchase Agreement (SAPA), a document containing crucial information such as the costs, guarantees, and clauses of contract provisions. In case of structured and complex transactions, the parties may also agree to enter into a binding contract, subject, however, to suspensive clauses.

Most transactions are cancelled at this stage. According to McKinsey & Company (2019) survey, the main cause of termination of negotiations is price disagreement (42% of responses out of the overall number of participants), followed by regulatory/antitrust restrictions (14%). These figures underline the key role of this phase both in terms of achieving a successful negotiation and in terms of proper target valuation.

6) *Integration*

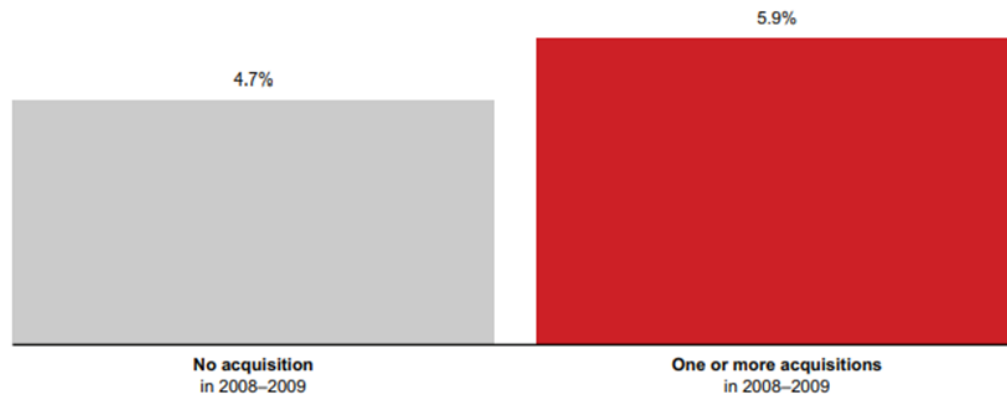
Undoubtedly, the integration process between the two entities is the most delicate phase after the agreement has been signed. It is critical to start the integration planning as early as possible in order to unify assets, people, tasks, and resources of the companies in a way that maximizes the enterprise's value by achieving efficiencies and synergies. The deal thesis must be translated into a target operating model (TOM) and concrete non-financial outcomes that can be comprehended and supported by all teams involved. The members of the organization should be able to understand the importance of their role and should be encouraged to estimate the value they can bring from the beginning. This enables constant updates to the deal thesis as the integration progresses, leading up to the handoff from the integration team to the frontline managers (Rouse & Frame, 2009).

1.3 Motivations for Pursuing an M&A Deal

In order to delve into the details of M&A deals and to familiarise with the opportunities that these types of deals can bring to those pursuing them, it is helpful to have an introduction to the various rationales behind the execution of strategic M&As.

Due to their nature, M&A deals are powerful tools to quickly achieve company objectives. Indeed, there is evidence that companies which have been carried out at least one acquisition in their lifecycle are more successful than others, and manage to be more resilient in periods of downturn. To substantiate the point just made, a report by Bain & Company (2023), conducted on about 3,000 firms, revealed how companies that acquired other firms during the last economic downturn have tended to outperform significantly over the long term.

Figure 1.1 – Average total shareholder return (compound annual growth rate 2007-2017)



Source: Bain & Company (2023), *M&A Report*

The motivations behind M&As can be totally different. There could be defensive motivations for some industries: to be considered, for example, the industries most at risk after Covid-19 pandemic. Then, there could be growth motivations, which can relate all those industries that experience a sudden increase in sales. Lastly, there are industries where M&A activity has always remained unchanged, such as financial and pharmaceutical ones.

Generally, several reasons can be listed as to why companies choose to pursue the M&A path. These motivations reflect the main synergies that M&A transactions can produce (Berk, & DeMarzo, 2020; Kumar & Sharma, 2019; Ahammad et al., 2017).

1) *Entering new markets*

In cases where the aim of M&A activity is to enter a new market, one talks about *cross-border M&As*. When compared to internally generated product development and new business openings, cross-border M&A offers firms a more rapid entry into new markets.

Indeed, building a global organization and establishing a competitive presence can require significant time, effort, and expense due to several factors, such as cultural differences, liability of foreignness, well-established different practices, and regulatory restrictions. M&As can be a valuable time-saving channel by providing immediate access to local networks of suppliers, marketing channels, clients, and other skills. For this reason, M&A deals are more appropriate for fast entry into a new market than greenfield investment.

2) *Economies of scale and scope*

Through M&A deals, companies can exploit potential benefits of integrating companies with complementary businesses. These benefits include *economies of scale*, meaning the cost-cutting and efficiency-increasing phenomenon associated with higher production volume. This can be accomplished

through several means.

For instance, a company with a highly leveraged balance sheet may find it difficult or costly to raise capital. However, if it is acquired by a company with a healthier balance sheet, the combined entity can more easily access capital markets and raise funds at a lower cost due to reduced overall risk. Moreover, economies of scale can also be achieved through increased bargaining power in the entire value chain process. When companies join forces, they can purchase raw materials at lower rates by gaining a larger market share. They may also be able to sell their products at higher prices than before, leading to greater economies of scale and higher margins.

Another category of benefits relates to *economies of scope*, which are often present in non-conglomerate acquisitions. These benefits refer to the reduction of a company's average cost in producing more products or services together.

3) *Vertical integration*

Vertical integration is a widespread motivation for the pursuit of M&A deals, which occurs when two companies, operating in the same industry and producing goods at different stages of the supply chain, decide to merge. Similarly, one company may believe that it can improve its products and business by directly controlling the inputs necessary to make them, while another may seek to take control of its distribution channels if it is dissatisfied with how its products are being distributed.

Enhanced coordination stands as the key benefit of vertical integration. Through the consolidation of two entities under a central management framework, the aim is to foster collaboration towards a shared goal. Nonetheless, it should be noted that vertically integrated companies are generally large, and managing large corporations can be challenging, given their expensive nature. As a result, not all prosperous companies opt for vertical integration as their preferred approach.

4) *Access to critical resources and technological know-how*

Companies engage in cross-border M&As also to acquire new capabilities and knowledge. In today's complex product landscape, most firms require to rely on external sources of expertise in order to compete effectively. To acquire this expertise, a firm can either attempt to hire workers with the required skills from the labour market or purchase an existing company that already has the talent and resources desired. This latter path, widely pursued by high-tech industries, sometimes turns out to be the most efficient strategy.

Furthermore, acquiring another company grants access to critical assets and resources, such as protected innovations, exceptional expertise, that create barriers to entry for other enterprises into the market.

5) *Greater market power*

The strategic employment of M&A aims to strengthen market influence, increasing market power through

the acquisition of companies operating in the same industry, in the same segments of the primary industry (as a supplier or distributor), or in closely associated sectors. In essence, engaging in M&A deals can amplify the company's size, potentially leading to increased profitability and shareholder value. This benefit can be achieved through two means: monopoly or monopsony. In the case of a *monopoly*, the acquiring company may be able to charge higher prices for its products due to reduced competition. In the case of a *monopsony*, the combined entity may have more purchasing power, allowing it to negotiate lower prices for raw materials or inputs needed for production (Berk & DeMarzo, 2020).

However, consolidation activities are limited by antitrust laws in most countries, as they may lead to negative effects on society as a whole. Enforcement of these laws can vary across different regions and time periods, based on the policies of the leaders in charge.

6) *Diversification*

Diversification is another major driver behind M&As, allowing firms an opportunity to reduce costs and risks of expanding their business. This happens when the target company operates in an unrelated business to the buyer and sells products or services that bear no relation to those of the buyer.

By purchasing a company belonging to a different industry, it is possible to enjoy lower borrowing costs and increased debt capacity due to the lower probability of bankruptcy. Nevertheless, in this case, care must be taken to ensure that any gains from leverage exceed the costs of running a larger and less-specialized firm.

Finally, a further benefit resulting from diversification concerns the asset reallocation capacity across industries and emerging opportunity exploitation. However, agency costs may lead to inefficient allocation of resources, with profitable divisions subsidizing money-losing ones for longer than is optimal.

7) *Managerial self-interest*

Managers may also have their own motivations for pursuing M&A deals. Actually, managers often undertake M&A deals to maximize their own benefits at the expense of their company's shareholders. One possible explanation for this phenomenon is the conflict of interest which exists between managers and shareholders, as managers may prefer to lead a larger corporation. Thus, the apex positions of the company may secure additional remuneration and prestige. But since most CEOs do not have more than a small portion of their company's stock, they may not bear enough of the cost of a bad deal that increases their personal benefits.

Another motivation for managers to pursue mergers is informational advantage, i.e. managers or controlling shareholders choose to acquire their own firm when it is undervalued by the market. Finally, overconfidence, also named as *managerial hubris* (Roll, 1986), is also a factor that may motivate managers to pursue M&A transactions. In fact, people generally tend to be overconfident in their abilities, and psychological research has shown that it takes repeated failures for a person.

8) *Tax efficient structure*

A business combination benefits from a tax advantage because losses of one division can be offset by profits of another division. Therefore, through M&A it is possible to create a tax efficient structure, carrying forward the accumulated losses of the acquired company in order to set off the profits of the combined entity, resulting in tax savings for the company considered as a whole. Similarly, if the acquired entity has received investment allowances in the form of tax exemptions for initial years of operations, the combined entity may be able to access these benefits and enhance its profitability.

1.4 Reasons for the Failure and Key Success Factors of M&A Deals

All phases of the M&A deal cycle must be carefully executed in order to avoid the risk of transaction failure. In fact, despite most companies see mergers and acquisitions as the best solution to their business challenges, unfortunately, only a few of them put in the necessary effort to conduct proper planning and due diligence for a successful integration process.

In this regard, companies should be aware that more than 10 percent of all large mergers and acquisitions fail, according to McKinsey (2019). This percentage becomes even larger if all M&A deals as a whole are considered. Mergers and acquisitions are inherently risky, and without proper strategy, intuition, and integration plan, any M&A deal is likely to fail. Understanding the reasons behind the failure of most M&A deals can help those who are considering such deals avoid some of the common pitfalls.

Kumar & Sharma (2019) provided a comprehensive overview of the reasons for the failure of mergers and acquisitions, including the exaggerated valuation and overpayment of target companies, cultural differences, high-cost debt, flawed intentions, insufficient due diligence, and overestimating value of synergies.

1) *Exaggerated valuation and overpayment*

M&A deals generally result in generating synergies between entities and increasing profitability by more than enough to compensate the premium paid for the acquisition. However, assets that appear to be worth high value may sometimes not necessarily be the key factors in the success of the deal. The majority of failures in mergers and acquisitions stem from undisciplined executives who overvalue the deals due to incorrect identification and calculation of synergistic benefits. This often leads to an overestimated value and results in buyers overpaying for acquisitions, which is known as *irrational exuberance* (Shiller, 2000).

The primary objective of a company in a merger or acquisition is to generate benefits for its shareholders. However, in reality, most companies fail to achieve this goal due to a lack of due diligence, which often leads to an overestimation of the value of the company. This can result in multiple companies engaging in counterbidding for the same company at an inflated price.

2) *Cultural differences*

Every company has a unique working and organizational culture, and when two companies merge, their corporate culture can be vastly different (work schedules, work environment, processes, amount of freedom, etc.). The diversity of backgrounds can be very difficult to manage, especially in cross-national acquisitions.

Bauer, Matzler & Wolf (2016) analysed the impacts of these dissimilarities on the successful outcome of M&A transactions, emphasising the role of human integration, which involves establishing a shared identity and fostering satisfaction among employees from both organizations, in realising a value-creating transaction. On the other hand, task integration, which entails the transfer and sharing of resources and capabilities, proves advantageous for innovation output. Additionally, national cultural differences can have crucial effects on M&A deals, both from a negative and positive side. Indeed, if such differences are not understood or accommodated, they can have very detrimental impacts on the post-deal integration process; on the contrary, if they are exploited advantageously, they can bring the combined company significant benefits in terms of complementarity and subsidiarity. This is the reason why high priority should be given to this topic during the integration process.

Therefore, it is crucial to give high priority to cultural differences between the merging societies throughout the integration process, understanding all factors that may lead to inequalities and establishing strategies to integrate them in a beneficial manner.

3) *High-cost debt*

The majority of M&A deals are financed with significant and extraordinary debts, which can ultimately result in a relevant financial burden for the acquiring company. This is the case with LBOs, in which large amounts of bonds and/or loans are issued (*Section 1.1.2*). These unsecured debts that carry high interest rates can lead to a decline in the stock prices of the parent company.

Moreover, when multiple companies compete to acquire the same target company, they may end up paying an inflated price. To finance this overestimated price, the acquiring company typically resorts to high-cost debts (Jindal, 2015). Consequently, the firm must strive to manage these debts, which further impacts the parent company's stock prices and overall performance.

4) *Flawed intentions*

A flourishing stock market can provide favourable conditions for M&A deals, but this can lead to issues down the line. Transactions executed with overvalued shares may seem easy, but a lack of strategic thinking behind them can cause trouble.

Many top executives often receive performance earn-out clauses associated with the achievement of non-monetary milestones, such as the completion of M&A deals, regardless of what happens to the company or its share price later. This situation is closely related to the "Agency Theory" developed by

Jensen & Meckling (1976): managers have an incentive to carry out M&A deals in order to increase firm's size and, as a consequence, their reputation, whilst not focusing on firm's performance.

In fact, research suggests that executives' income can continue to rise even when the acquiring company experiences significant declines in performance (Firth, 1991). This indicates that M&A activity may be pursued by managers even if it does not guarantee increased profits and shareholder wealth.

5) *Insufficient due diligence*

It might be assumed that any merger or acquisition involving significant amounts of money would be the result of thorough research and analysis. The purchasing or investing company is expected to have complete knowledge of the target company. However, as already mentioned in *Section 1.4*, a significant reason why M&As fail is due to gaps in this analysis.

Generally, companies are impressed by the target company's brand and fail to pay attention to important details. Whereas, prior to considering an M&A, conducting a collection and verification of pertinent information about the target company is crucial. Additionally, understanding how the brands will fit together after the merger is essential.

A thorough due diligence significantly mitigates the risks associated with purchasing another company for the buyer. It provides a comprehensive and transparent assessment, enabling an accurate valuation of the target company. By assessing the risks and opportunities presented by the target company, the buyer gains the necessary insights to make informed decisions (Jimenez & Sindik, 2022). Meanwhile, due diligence offers to sellers an understanding of the real market value of their company, enabling to set realistic expectations for the purchase price. Therefore, due to the crucial role due diligence plays in facilitating informed decisions, if not properly performed, it can lead to the failure of the whole deal.

6) *Overestimating synergies*

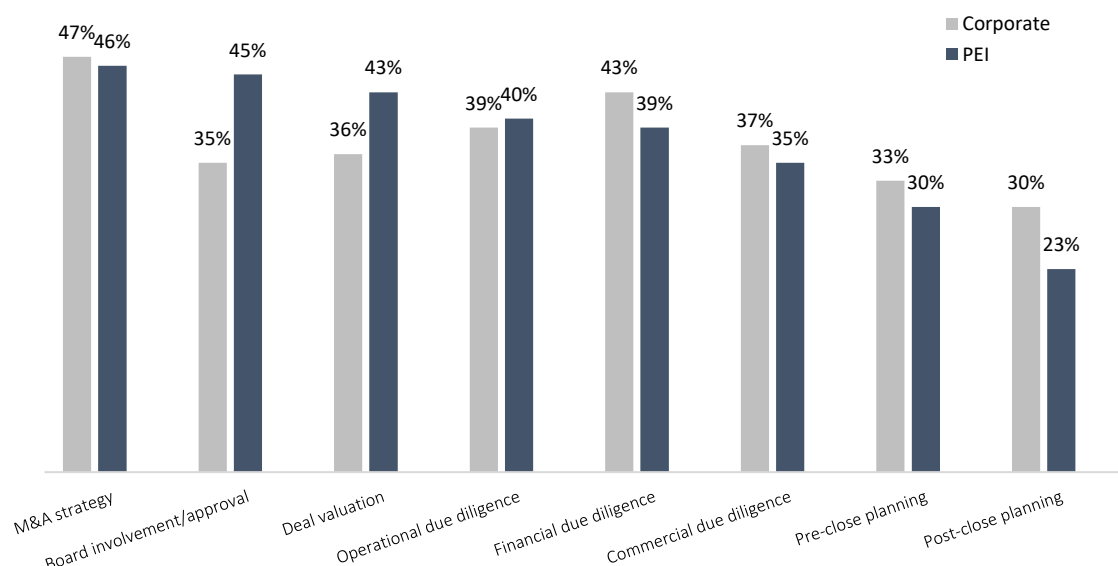
The primary cause for companies overpaying in M&A transactions is often irrational exuberance. This results in inflated assessments based on forecasted synergies, and the anticipation of growth prospects beyond the fundamental capabilities of the companies. Therefore, it is necessary to conduct a careful assessment of the synergies that may arise from mergers or acquisitions, grasping their real value without over-optimistic attitudes. This also requires the use of appropriate evaluation methods for assessing and identifying synergies, the most widely used of which are the DCF method and the method of multiples.

Furthermore, authors indicate as additional rationales for unsuccessful M&A deals, the limited owner involvement, high recovery costs, failures in the negotiation process, neglect of shareholder and employee interests, lack of common vision and strategic plan, poor communication and integration between parties involved into the deal, weak leadership, and other external factors.

In view of the discussion made so far, paying close and detailed attention to all potential factors that

may jeopardise the success of a deal, is therefore necessary. In this respect, the following figure shows the findings of a survey regarding the key elements for a successful M&A. Responses are divided into *Corporate* and *PEI* (Private Equity Investor) in order to reflect the different objectives and characteristics of deals depending on whether they are carried out by which of the two entities.

Figure 1.2 – Key M&A success factors



Source: Deloitte (2022), *2022 M&A Trends Survey*

The *Figure 1.2*, excerpt from a recent survey by Deloitte (2022), reveals that an insufficient or lack of board involvement during the whole M&A deal cycle, coupled with a poor M&A strategy are the main causes of failure in achieving a successful deal. Other factors considered to be critical to the success of a merger or acquisition are the correct assessment of the target value and deal synergies, plus an accurate due diligence. Ignoring the importance of conducting due diligence and creating a suitable integration plan is a common mistake that can result in the failure of the entire M&A process. Therefore, it is crucial for companies to invest time, effort, and resources into understanding the target company and developing an effective plan to ensure a successful merger or acquisition.

1.5 A Deep Dive into the M&A Market

At this point, it is worth introducing a general overview of the existing M&A market, with regards to both international and Italian context, outlining the main trends that will affect the total value of M&A deals in the near future.

M&A activity has definitely been widespread because of the rapidity with which it enables competitive advantages through increased market shares and know-how. In this regard, many companies

decide to resort to mergers and acquisition to increase their business size in order to compete on an increasingly globalised market.

The value of M&A transactions has fluctuated considerably in recent years, although it has always maintained at reasonably high levels. In 2022, nearly 50,000 merger and acquisition deals were completed worldwide and so-called *mega-deals*³ had a great influence in the market performance: in 2021, nearly 1,000 megadeals were worth a combined 3.7 billion U.S. dollars⁴.

This Section will shed light on the evolution of M&A activity since the 20th century, illustrating the cyclical trend that mergers and acquisitions have experienced over the years, up to the latest times. The current framework of M&A deals will then be analysed at both national and international level, focusing on the industries that contribute most to market growth and the most relevant deals that have taken place in the last period. Ultimately, trends that are expected to affect the global M&A environment in the near future will be presented.

1.5.1 M&A Waves

M&A activity has absolutely not been constant over the periods, experiencing several changes in trend. Since the 20th century, there have been several peaks in M&A transactions accompanied by quite troughs, resulting in merger and acquisition activity to follow a cyclical pattern, known as *merger waves* or *M&A waves*. Since the 1900s there have been several distinct merger waves, each with unique characteristics (Harford, 2005; Malik et al., 2014).

1) 1897 – 1904

During this period, firms and organizations sought to capitalize on their manufacturing capabilities by becoming sole sellers in the market, particularly in industries such as railroads, light, and power. For this reason, the first merger wave is also called *merger for monopoly*: during this period there witnessed corporate consolidation with the formation of large monopolies and industrial giants. These horizontal mergers mainly took place in significant sectors.

Unfortunately, the majority of the deals initiated failed to achieve their intended objectives, resulting in an unsuccessful outcome. In the US case specifically, the process of stopping mergers originated with the competition protection legislation introduced in 1890 by the Sherman Act (Caiazza, 2011).

2) 1916 – 1929

From 1916 to 1929, the second wave of mergers and acquisitions emerged. The main objective during this period was to facilitate oligopoly in the businesses involved in M&A deals. This wave – characterized by either horizontal or conglomerate deals – coincided with advancements in hi-tech, railroads, and

³ The term “mega-deals” refers to mergers and acquisitions worth one billion U.S. dollars or more.

⁴ For further information visit [Volume of M&A deals globally 1985-2023, Statista](#).

transportation. The key players in these deals were firms and organizations involved in the production of ore, minerals, food items, oil and fuel, transport, and chemicals. Banks played a significant role in supporting these M&A deals, with investment banks providing loans to investors on easy instalments. Unfortunately, the share market crashed in 1929, and the wave of M&A deals ultimately proved unsuccessful.

3) 1965 – 1969

Between 1965 and 1969, a third wave of mergers occurred, with the majority of deals being of a conglomerate nature. The financing of these mergers and acquisitions primarily relied on the capital of owners, with banks playing a minor role. However, towards the end of the wave, which coincided with 1969, the consolidation of disparate firms and organizations yielded unsatisfactory results, prompting a shift away from this approach.

4) 1981 – 1989

The fourth wave of mergers stood out due to the significant role played by hostile takeovers. By the 1980s, such takeovers had become an accepted form of business expansion and were even considered a highly lucrative speculative activity. Companies and investment groups began taking over firms as a means of reaping large profits in a short amount of time. Takeovers during this wave were classified as either friendly or hostile, depending on the response of the target firm's board of directors. The industries mainly involved by deals during this wave were oil and gas, pharmaceutical, banking, and airlines companies.

5) 1992 – 2000

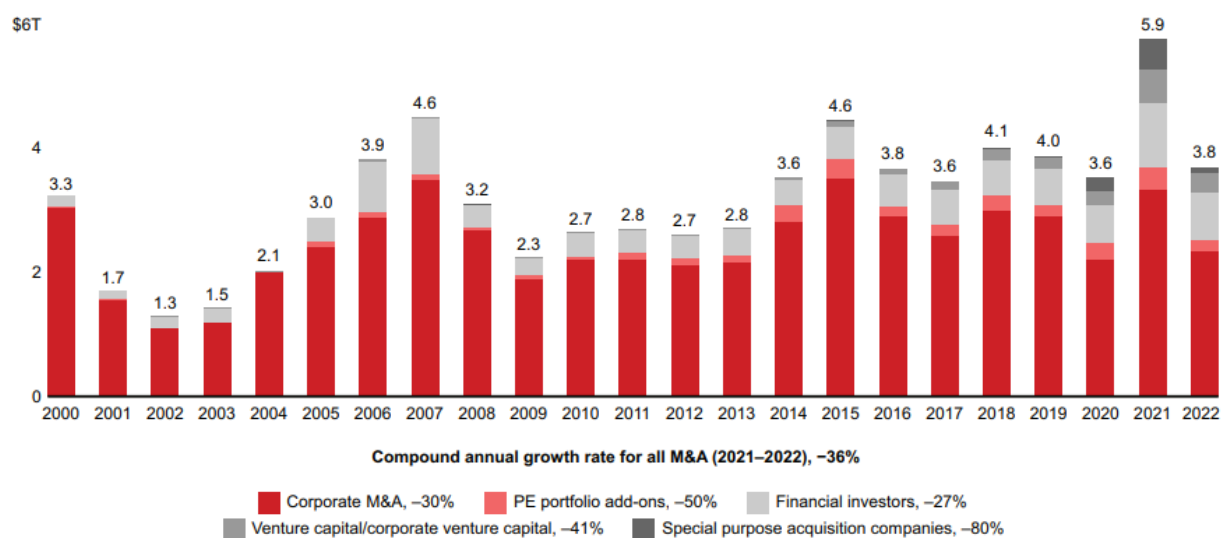
From 1992 to 2000, a wave of mergers occurred, which was fuelled by the global rise and boom of the stock market and subsequent deregulation. This wave primarily affected the banking and telecom sectors. The deals were partially backed by equity capital, as opposed to debt finance. In contrast with the previous wave, the fifth wave was characterized by friendly takeovers in several parts of the world, in particular in the United States, Europe, and Asia (Junni, & Teerikangas, 2019).

6) 2003 – 2007

The first M&A wave of the 2000s developed in the wake of the recovery after the dot-com bubble and was mainly due to private equity, globalization and investor activism. Globalization has paved the way for foreign direct investments (FDI) and ever more companies have embraced cross-border M&As to increase their business size and enter new markets. Governments on their side, through policies and incentives, have also tried to encourage consolidation processes. In addition, LBOs became very popular in those years, as a part of the rise of private equity investments during this time (Wright, Renneboog, Scholes, & Simons, 2006). At the end of 2007, the positive trend in M&A transactions came to a halt as a consequence

of the subprime mortgage crisis, which resulted in a downturn in the global economy and, ultimately, in investments.

Figure 1.3: Global M&A deal market value 2000-2022 (in trillions of US dollars)



Source: Bain & Company (2023), *M&A Report*

7) 2010 – 2015

At the end of the first wave of 2000s, the macroeconomic situation was not favourable to M&A investments due to – *inter alia* – high interest rates. From 2007 to 2008, there was a 30% fall in global M&A deal market value (*Figure 1.3*). The negative trend continued until 2009, only to return to rise from 2010 onwards. Between 2010 and 2013, M&A deal market values remained constant at approximately 2.8 trillions of US dollars. Thereafter, a sharp increase in M&A transaction volumes took place first in 2014 (+29% compared to 2013) and then in 2015 (+28% compared to 2014). In contrast with the previous waves, the so-called BRICS⁵ have been the most active countries in performing mergers and acquisitions (Monga, 2022). Emerging market companies aimed – through M&As – to gain access to know-how and technologies that would enable them to compete in global markets (Liou, Chao, & Yang, 2016). After a strong 2014 and a heated 2015, this second 2000s wave (2010-2015) stopped, with a global M&A deal market value's contraction of 27% in the first half of 2016 compared with the first half of 2015 (BCG, 2016). The primary driver of this sharp trend inversion can be attributed to the decline in the combined value of megadeals.

In 2021, following this most recent M&A wave, a resounding upsurge in M&A activity occurred, just before the emergence of the Covid-19 pandemic. It was a record year for M&A activity in both volume and value. There are several reasons behind this expansive phase of M&A deals; the main ones include the increased level of investor confidence arising from robust economic expansion, convenient capital

⁵ BRICS is an acronym used in international economics to refer to the following leading developing countries: Brazil, Russia, India, China, South Africa. These emerging countries share abundant strategic natural resources and have been characterised by strong growth in GDP, especially in the early 21st century.

accessibility, and substantial available funds within private equity firms. Consequently, valuations determined by EBITDA transaction multiples reached their highest point in 2021 (Rödl & Partner, 2022).

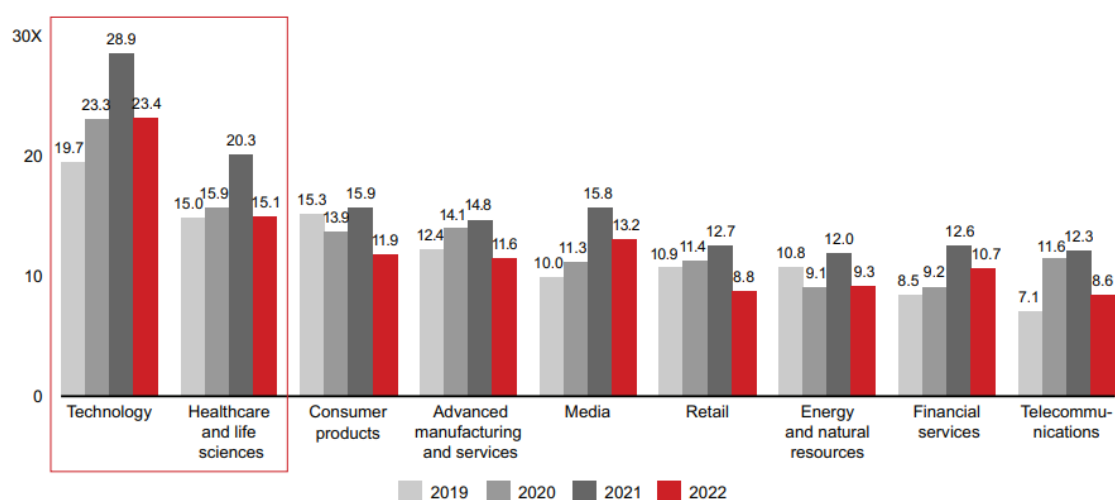
1.5.2 Global M&A outlook

In recent years, the dynamism of the business and financial world in international markets has increased the number and size of M&A transactions. A key role was played by the Covid-19 pandemic, which accelerated consolidation trends that existed even before the pandemic. Due to post-pandemic financing measures and optimistic outlook, 2021 was a record year for M&As. According to Bain & Company, in 2021 global M&A value was approximately \$5.9 trillion, marking an increase of 64% over 2020 levels. This increase was mainly due to a surge in investments corporate deals by financial investors, venture capitalists and special purpose acquisition companies (SPAC)⁶.

After the 2021 expansion, the first half of 2022 exhibited continued dealmaking activity. However, the interest hike by the US Federal Reserve Bank (June 16, 2022) and the European Central Bank (July 27, 2022), coupled with an increased macroeconomic uncertainty (inflation, geopolitical tension, supply chain uncertainty, etc.), contributed to a market slowdown in the second half, leading to a 36% decline in deal value in 2022 from 2021. Megadeals above \$10 billion declined in multiples and a midyear pause in megadeals occurred, as well as smaller deals slowed. As a result, strategic M&A multiples declined to a 10-year low median multiple of 11.9x EV (Enterprise Value) to EBITDA from 2021's historic high of 15.4x (Bain & Company, 2023).

The figure below (*Figure 1.4*) illustrates the various M&A transaction multiples (EV/EBITDA) over the years – from 2019 to 2022 – for each business industry.

Figure 1.4 - Median EV to EBITDA multiples per industry (strategic deals)



Source: Bain & Company (2023), *Global M&A Report 2023*

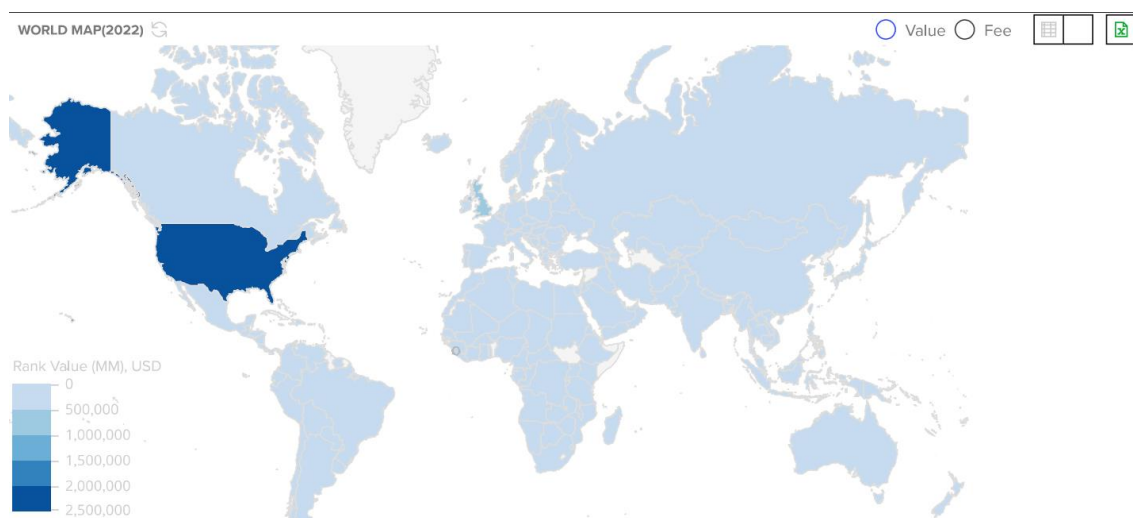
⁶ With the term SPAC (Special Purpose Acquisition Company), we refer to financial vehicles, without operational activities, which are set up by a team of sponsors in order to raise capital on the market through listing on the Stock Exchange.

The *Figures 1.3* and *1.4* show that, notwithstanding the downturn in the second half of 2022, deal activity persisted, led by the technology and healthcare/life sciences industries. In 2022, both industries recorded above-average median EV to EBITDA multiples of 23.4x and 15.1x respectively. Within these industries, the greatest deal in 2022 was Activision-Blizzard’s all-cash acquisition by Microsoft for \$68.7 billion (Microsoft, 2022) and the Oracle’s acquisition of Cerner – American supplier of Health Information Technology (HIT) services and devices – for approximately \$28.3 billion in equity value (Cerner, 2022). Among the latest technology-related deals can be found the Adobe’s acquisition of Figma (September 15, 2022) aimed at creating synergies linked to product designing and platform accessibility.

From a geographical point of view, by far the most active region in deal-making is the United States. In 2022, according to Refinitiv, the total M&A deal value in the US was about \$2.2 billion, while in the first quarter of 2023 the US already reached a total M&A value of over \$520 million from more than 16 thousands transactions. The United Kingdom follows with around 4.7 thousands deals in 2022 realised for a rank value of \$538 million. At third place is China, which recorded almost 5 thousands M&A transactions with a total value of about \$400 million.

For more details, refer to 2022 world map (*Figure 1.5*) and table (*Table 1.3*) below.

Figure 1.5 – M&A World Map (2022)



Source: Deals Market Overview, *Refinitiv* as of December 31, 2022

Table 1.3 – Top 20 Countries for M&A activity (2022)

Rank	Countries/Regions	Rank Value (MM USD)	Number Of Deals
1	United States	2,182,895.33	16089
2	United Kingdom	538,432.26	4698
3	China (Mainland)	406,148.56	4955
4	Canada	179,602.93	2736
5	India	160,942.89	2473
6	Japan	141,729.68	4263

7	Australia	140,865.15	1998
8	Germany	120,055.63	2071
9	Italy	114,221.03	1479
10	France	95,548.72	2582
11	Netherlands	83,406.80	1025
12	South Korea	76,964.51	2119
13	Switzerland	65,607.61	572
14	Brazil	64,945.75	975
15	Spain	55,901.35	1648
16	Hong Kong	50,700.46	423
17	Singapore	43,197.27	642
18	Sweden	41,759.52	1084
19	Israel	37,363.95	286
20	United Arab Emirates	26,424.44	288

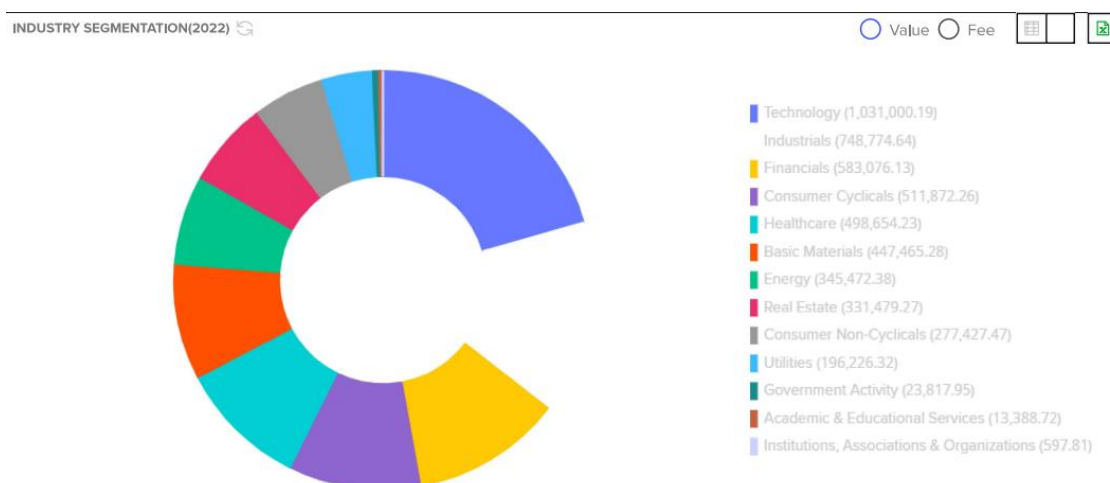
Source: Deals Market Overview, *Refinitiv* as of December 31, 2022

From an industry perspective, as previously stated, the technology industry was the one with the highest total value of M&A deals in 2022. In this year, the total rank value of M&A deals in the technology industry was \$1.031 billion, representing approximately 21% of the global market. The industrial sector (15% of the overall market) and the financial sector (12%) follow, while a fast-growing industry compared to 2021 data was that one related to government activity. This industry recorded a total rank value of mergers and acquisitions in 2022 of about \$ 23 million, marking an increase of +761,13% Year-on-Year.

In Q1 2023 the rankings changed slightly as the energy industry was the most involved in M&A deals: in the first quarter of 2023, this industry already recorded mergers and acquisitions worth \$173 million. Further industries particularly affected by M&A transactions were the aforementioned financial, technology and industrial sectors, and the healthcare industry.

The following figure (*Figure 1.6*) presents a pie chart showing the industry-based M&A market segmentation related to the last year in full (2022).

Figure 1.6 – Global M&A Industry Segmentation (2022)

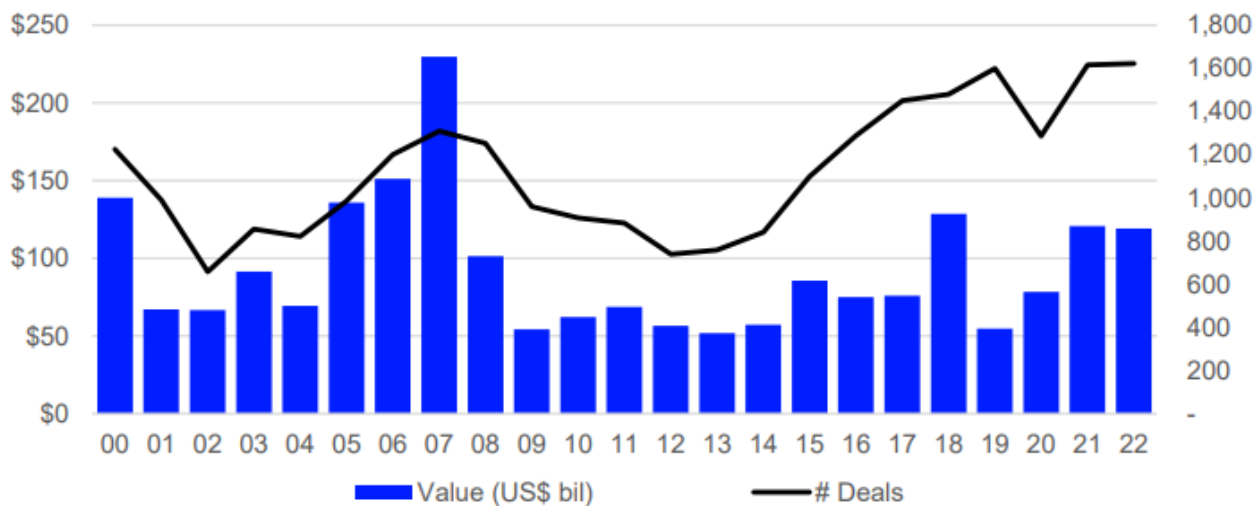


Source: Deals Market Overview, *Refinitiv* as of December 31, 2022

1.5.3 Italian M&A outlook

In contrast to the general picture, after a record year in 2018, since 2020 M&A deals in Italy have increased both in volume and value. According to LSEG Business (2023), mergers and acquisitions involving Italian entities reached around a \$115 billion value during 2022 (with a total of 1622 deals), more than the combined value of M&A deals recorded in the preceding two years.

Figure 1.7 – Italian M&A annual volumes (2022)

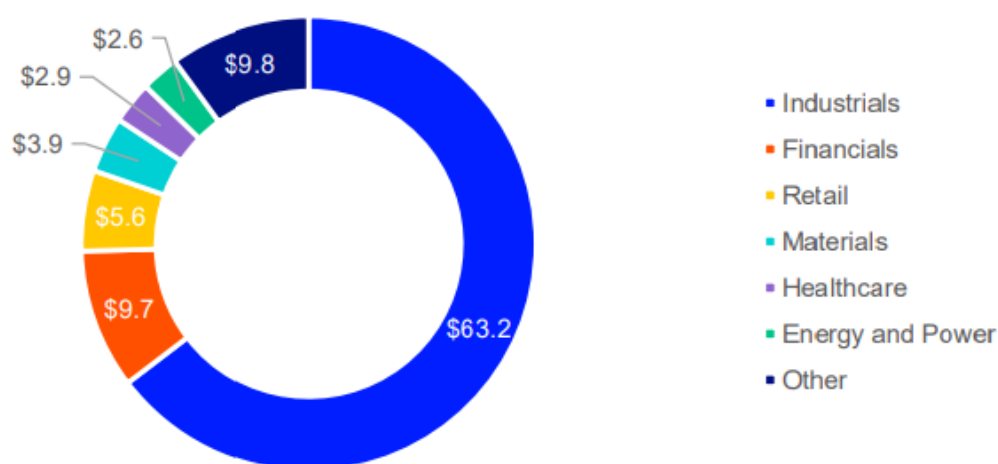


Source: LSEG Business (2023), Refinitiv Deals Intelligence, *Italy Mergers & Acquisition Review – 2022*

At industry level, industrials (with 65 per cent), financials (10 per cent) and retail (6 per cent) are the market's leading industries in terms of values. Turning to the segments that have been proven to have a higher impact on the total number of M&A deals, the technology (+3%), infrastructure (+2%) and business services (+1%) industries are the segments that showed the most upward trends in 2022 vs 2021. On the other hand, the more traditional sectors of *Made in Italy*, i.e. industrials and chemicals (-3%), and consumer (-3%), more penalised by inflationary pressures that have negatively impacted margins and profitability, declined slightly in the value of M&A deals compared to the previous year. The energy industry experienced a modest fall too of 2% compared to the previous year, with diverging trends observed among sub-sectors: while the alternative energy segment showed substantial growth, the more conventional oil & gas segment faced though challenges.

On the following page is a pie chart illustrating the industries most influential on the volumes of M&A deals involving Italian entities.

Figure 1.8 – Italian M&A industry segmentation (2022)



Source: LSEG Business (2023), Refinitiv Deals Intelligence, *Italy Mergers & Acquisition Review – 2022*

Deepening the individual deals, the largest Italian M&A transaction by far of the year was the acquisition of infrastructure group Atlantia SpA, with a bid of \$ 52.1 billion led by Blackstone and the Benetton family, which accounted for a substantial 44% of the total Italian M&A activity in 2022.

Figure 1.9 – Top deals with any Italian involvement (2022)

Value (US\$ bil)	Target Name	Target Nation	Target Macro Sector	Target Mid Sector	Acquiror	Deal Status	Rank Date
\$52.1	Atlantia SpA	Italy	Industrials	Transportation & Infrastructure	Schemaquarantatre SpA	Completed	4/14/2022
\$8.7	CNH Industrial-Off Highway	Italy	Industrials	Automobiles & Components	Shareholders	Completed	1/3/2022
\$6.8	Bp Plc-Angolan Oil & Gas Bus	Angola	Energy and Power	Oil & Gas	Eni Spa-Angolan Oil & Gas Bus	Completed	3/11/2022
\$2.9	Autogrill SpA	Italy	Retail	Food & Beverage Retailing	Dufry AG	Pending	7/11/2022
\$2.5	Fedrigoni SpA	Italy	Materials	Paper & Forest Products	Fiber Bidco SpA	Completed	10/10/2022
\$1.4	Daphne 3 SpA	Italy	Financials	Other Financials	Investor Group	Completed	3/3/2022
\$1.4	Enel Transmission Chile SA	Chile	Energy and Power	Power	Sociedad Transmisora Metro	Completed	7/28/2022
\$1.4	Mondelez Intl Inc-Gum Bus	United States	Consumer Staples	Food and Beverage	Perfetti Van Melle Group BV	Pending	12/19/2022
\$1.3	Associazione Calcio Milan SpA	Italy	Media and Entertainment	Recreation & Leisure	Investor Group	Completed	6/1/2022
\$1.3	Biofarma Srl	Italy	Healthcare	Pharmaceuticals	Ardian SAS	Completed	1/17/2022

Source: LSEG Business (2023), Refinitiv Deals Intelligence, *Italy Mergers & Acquisition Review – 2022*

Besides the acquisition of Atlantia SpA, a number of major mergers and acquisitions at a strategic level occurred in 2022. In the retail sector, the Swiss group Dufry made a substantial investment of around \$3 billion in Autogrill, while in the industrials sector, a noteworthy operation took place involving BC Partners and Bain Capital in Fedrigoni SpA (\$ 2.5 billion). Even the sports world was in a state of excitement about M&A deals, with certain M&A deals completed. Among these, on 31st August 2022, the acquisition of one of the most prominent Italian football clubs, AC Milan, by RedBird Capital Partners, for approximately

\$1.3 billion, was formalised.

In recent years, private equity funds have played a crucial role in the Italian M&A landscape, accounting for nearly one-third to over 40% of the total deal value, as estimated by PwC (2023). Fundraising activities have been robust, fuelled by the growth of private capital activities for family offices and institutional investors, resulting in a substantial dry power of approximately \$2.4 trillion ready to be invested.

Table 1.4 – Macro-categories of M&A investors in Italy

	FY18	FY19	FY20	FY21	FY22	Δ FY 22 vs 21
Private Equity	59.8%	75.2%	38.4%	51.7%	75.3%	105.9%
Corporate	40.2%	24.8%	61.6%	48.3%	24.7%	28.0%

Source: PwC (2023), Global and Italian M&A Trends 2022 & Outlook 2023

Lastly, while rising interest rates and macroeconomic uncertainties have slowed down transactions in the latter half of 2022, the available liquidity in the market will likely sustain the activity of funds. However, these funds are expected to adopt a more selective approach in evaluating opportunities for short to medium-term value creation.

1.5.4 M&A forecasts and predictions

Although it suffered a setback in second half of 2022, the global M&A market is expected to recover and experience further periods of acceleration in the near future. In particular, a shift towards deal-making momentum is projected for the second half of 2023 and beyond, as reported by a report of Morgan Stanley (2023). In the same report, Morgan Stanley’s bankers outlines four main future drivers expected to spur M&A activity, which include:

- 1) the push from well-established industries, where leading companies could sustain their growth by making acquisitions in their core businesses;
- 2) the increasing incidence of private equity funds;
- 3) the expected increases in shareholder activism;
- 4) the resurgence of cross-border M&A transactions as the impact of trade tensions between the United States – the leading country by M&A volumes – and China diminish, and the consequences of the Ukraine war fade away.

First, in terms of industries impacted by deals, PwC (2023) points to the *automotive* industry as one of the most involved in mergers and acquisition, driven by the ongoing transition to electric vehicles and

the emergence of new innovative technologies. M&A activity in this industry could provide a tool to ensure more resilience in supply chains, preventing supply disruptions such as those that occurred – in the wake of the Covid-19 pandemic – for semiconductors (Rotunno, 2021). In addition, within the consumer market, great interest is attracted by the *food* industry. PwC expects that among the hottest segments in the food industry will be grocery retail, with both bundling and vertical integration deals, pet food and pet care, fuelled by the growing number of pet owners, and nutraceuticals, stimulated by private equity funds' investments. Moreover, the *fashion* industry is expected to be dominated by vertical supply chain integration/consolidation transactions performed by large luxury players.

Other industries potentially interested in M&A activities might be the *telecom, entertainment & media* industry, which will remain a hot industry for both funds and strategic investors looking for new capabilities and entry points (especially in the segments of fintech, e-commerce and IoT), the *healthcare & pharma* industry, where a lot of mid-cap M&As are expected, especially in biotech, as well as divestments by big pharma in order to focus more on core business, and the *energy & utilities*, where asset divestments by large oil companies are foreseen. Furthermore, the e-mobility and renewables segments will be very attractive in the wake of rising energy prices and infrastructure costs (PwC, 2023).

Second, activism in M&A deals will be driven mainly by increased investments by private equity firms. The year 2022 witnessed a robust start for the private equity sector after a momentous year of deal making. However, the landscape took a turn as the second half of the year was marked by the challenges of rising inflation, interest rates, and geopolitical tensions. Despite these hurdles, private equity funds demonstrated their resilience, achieving a historic milestone of \$920.2 billion in record deal value in 2022 (KPMG Advisory, 2023).

As the conditions continued to evolve into 2023, private equity firms swiftly adapted to the changing landscape. The KPMG 2022 Year-End M&A Survey finds that the vast majority of PE firms expect their deal will remain static or decline over the 2023; in particular, 69% of the respondents expect their firm's buy-side activity will remain the same or decrease and 74% of them believe that their sells-side deal activity will not experience any increase.

Nevertheless, KPMG has an optimistic outlook for the second half of 2023, as a resurgence in deal activity is anticipated. This expectation is rooted in the increasing certainty that the Federal Reserve and the European Central Bank will scale back on interest rate hikes and that the consumer price index will stabilize. Until that time, private equity firms are placing greater emphasis on optimizing the performance of their existing portfolios (KPMG Advisory, 2023).

In view of the central prominent role of PE funds in terms of signalling (Humphery-Jenner, Sautner & Suchard, 2017), since they indicate the quality of a deal, it will be necessary to stimulate these funds to positively influence the market's perception of the deals' quality, in order to increase the value of M&A transactions to the levels observed in 2021.

Third, according to Tom Miles and Brian Healy⁷, Co-Heads of Americas M&A at Morgan Stanley, a decisive factor for the recovery of M&A deals will be shareholder activism. For companies that handled the 2022-2023 inflationary environment sub-optimally and underperformed, activists have initiated campaigns to advocate for changes they believe will generate value, and this is expected to continue throughout 2023 (Morgan Stanley, 2023).

Lastly, the cross-border transactions will be one of the main drivers of M&A activity in the coming years (Morgan Stanley, 2023). Morgan Stanley's bankers suggest that unlike previous downturns in mergers and acquisitions (M&A), such as the aftermath of the dot-com bubble in the early 2000s and the financial crisis of 2008-2009, the recent decline in activity is likely to be relatively short-lived. Therefore, as the challenges raised by the pandemic, the trade tensions between the U.S. and China, and the Russian-Ukrainian conflict will end, cross-border M&As are expected to see a resurgence over the next couple of years.

⁷ For a thorough discussion: 2023 M&A Outlook: 4 Trends to Watch as Deal-Making Accelerates. *Morgan Stanley*.

CHAPTER II

M&A, Control and Synergies: A Valuation Perspective

Business valuation aims to estimate the value of a company using specific methodologies and assumes particular relevance for M&A. Since large amounts of capital are invested, the parties engaged in mergers and acquisitions share the interest in ensuring the fair valuation of the target and in reducing the risks associated with acquisition.

For a successful M&A deal, it is essential to properly assess the value of the target company along with the benefits strictly related to the merger or acquisition. This involves the recognition of all sources of value creation in an M&A transaction, such as economies of scale and scope, the potential for cross-selling, and the benefits associated with the acquisition of control in the target company.

Therefore, it can be stated that the process of valuing M&A deals is essentially the same as valuing any other firm, with the added complexity of considering corporate control and synergy values. According to Damodaran (2005), due to the interdependence between synergy and control, the most secure approach to assessing the value of a target firm involves a step-by-step method. This begins with an estimation of the value that the company has as a separate entity (the so-called “stand-alone value”), followed by a valuation for control premium and a distinct valuation for synergies. Thus, the evaluation of an M&A transaction can be summarised as:

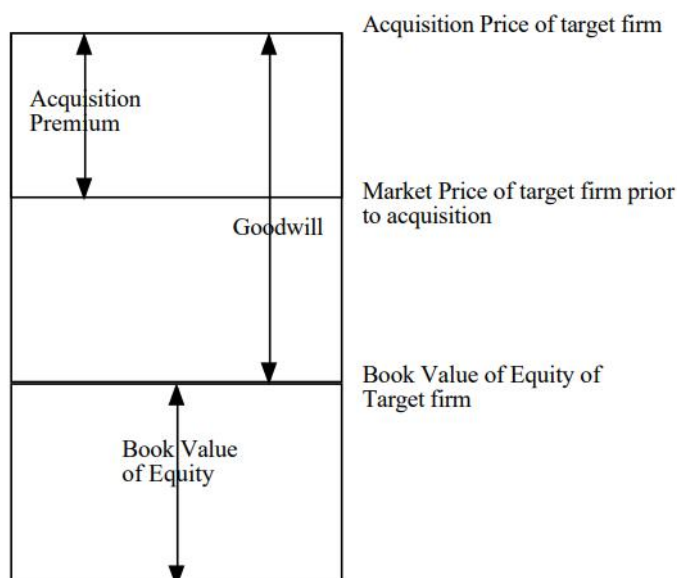
$$M\&A\ Deal\ Valuation = Stand\ alone\ value + Synergies + Control\ premium$$

The existence of corporate control and synergies explains the key difference between the acquisition price defined upon negotiations and the market price prior to the acquisition, known as the *acquisition premium*.

Moreover, the difference between the acquisition price and the accounting book value of the equity in the acquired firm is known as *goodwill*, defined by IFRS 3, “Business Combinations”, as *an asset representing the future economic benefits arising from assets acquired in a business combination that non individually identified and separately recognised*. Stated in another way, goodwill is the ability of a business to yield profits that arise either from specific factors that, despite contributing positively to the income stream, do not have an autonomous value, or from increases in value that the overall business assets acquire over the sum of individual assets’ values, as a result of the allocation of resources in an efficient system.

As shown in the figure on the following page, goodwill includes the acquisition premium.

Figure 2.1: Breaking down the acquisition price



Source: Acquisitions and Takeovers (2000), Damodaran

In this chapter, the main approaches to assess the stand-alone value of the target firm will be discussed. In this respect, it will present the three main approaches to company valuation: income approach, market approach and asset approach. Then, the main methods for company valuation will be detailed, including discounted cash flow model, relative valuation (guideline public company method and transaction multiple method), and real options approach. Finally, a focus on the measurement of synergies and corporate control will be proposed.

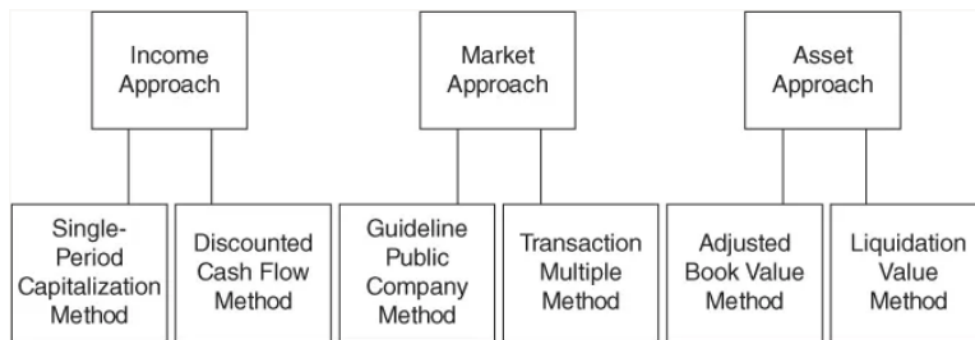
The contents disclosed in this chapter will serve as a baseline for the evaluation of the case study concerning an M&A deal, presented in the Chapter III.

2.1 Introduction to the Business Valuation Approaches: Income, Market and Asset Approach

Arriving at an accurate valuation for a business being sold or acquired is not easy. It is essential to use the right approaches that can help determine its fair value while also taking into account the exact investment involved and the returns generated by the company. This Section aims to enhance the precision of the valuation process by introducing three key valuation approaches most widely adopted in professional practice.

As illustrated in the *Figure 2.2*, the three main valuation approaches to company valuation are: *income approach*, *market approach*, and *asset approach* (Evans & Mellen, 2018). Additionally, the *real options approach* can be added, which will be discussed in Section 2.4.

Figure 2.2: Business Valuation Approaches and Methods



Source: Evans & Mellen (2018), *Valuation for M&A: Building and Measuring Private Company Value*.

Each approach includes several methods, such as the discounted cash flow (DCF) method and the single-period capitalization method for the income approach, the guideline public company method and the transaction multiple method for the market approach, and the adjusted book value method and the liquidation value method for the asset approach.

While each method has its own valuation procedures, they can be limited in use or effectiveness in specific appraisal assignments. For instance, the income approach is mostly concerned with future returns that are discounted to reflect their relative level of risk, while the market approach determines value based on the price paid for alternative investments. Meanwhile, the asset approach calculates value based on a hypothetical sale of the company's underlying assets (Evans & Mellen, 2018).

Although it is recommended to use all three approaches in every appraisal assignment, this may not always be practical. By way of example, a company with no positive return to discount or capitalize may not be suitable for the income approach, and a lack of comparable companies may prevent the use of the market approach. Additionally, the asset approach may not accurately capture intangible or goodwill value that is not reflected on a company's balance sheet.

The three main approaches to business valuation can be described as follows (Evans & Mellen, 2018):

1) *Income approach*

In the world of finance, the income approach to valuing an investment is a popular choice. Even in situations such as the execution of an M&A deal, this valuation approach is an effective way to determine the value of a company, since it provides a steady way to take into evaluation the risks linked to the merger or acquisition, and estimate the (present) value of the investment. It also allows for the quantification of expected benefits arising from revenue enhancement, cost reductions, process improvements, or lower capital costs, and to be evaluated and debated.

According to this approach, an investment's value (such as an M&A transaction) is determined by the present value of all future benefits, discounted at a rate of return that reflects how risky the investment is. However, successfully applying the income approach is not always easy to realise, because the analysts must assess both the return and rate of return – key determinants of value – with accuracy. In order to do

so, it is fundamental to carry a careful analysis of a range of main variables that impact investment's return (prices, volume, and expenses, as well as the associated risks). Furthermore, when applying this approach, it is important to integrate acquisition analysis into the company's overall strategic plan, supported by a budget and forecasted financial statements.

Finally, the income approach does not include the value of all tangible and intangible assets owned by the firm, as they are necessary to generate returns. If a company owns excess operating assets or non-operating assets, these items can be valued separately and added to the operating value in order to estimate the overall value of the enterprise.

2) *Market approach*

The market approach is based on the idea that a rational investor would not pay more for an asset, business or another item than the cost of acquiring a similar item. Therefore, this approach relies on *multiples* to assess the value of a firm. Market multiples, such as EBITDA or revenue multiples, are commonly used in M&A, although they require relevant expertise in determining the panel of companies considered similar, the relevant industries, and the appropriate multiple to use in order to assess the target company's performance.

There are two main methods belonging to the market approach that are relevant to M&A valuation: the *Transaction Multiple Method* and the *Guideline Public Company Method*. These methods result from different types of transactions and yield different types of value, despite there are a variety of multiples and ratios that can be used to compute the value of the firm with either methods.

Just like the income approach, the market approach includes the value of the tangible assets used by the company in its operating activity. Furthermore, when a firm has extra operating or non-operating assets, it is possible to evaluate them separately and add their value to the overall worth of the company.

3) *Asset approach*

The asset approach is usually applied when the buyer is willing to acquire specific tangible or intangible assets, or when the target's value is limited to specific tangible assets. Indeed, sometimes buyers acquire companies to take control of their assets, especially in capital-intensive industries – such as the technology industry – or valuable assets can be sold to recover some of the acquisition cost from the buyer perspective. Moreover, some target companies may generate little or no return and it becomes necessary to estimate their value relying on a hypothetical sale of their assets.

In the following sections (*Section 2.2 – 2.4*), the main M&A deal valuation methods, as anticipated above, will be presented. The focus will be mainly on income approach and market approach, leaving aside the asset approach, since it is scarcely applied for M&A transactions. Additionally, a section dedicated to real options, i.e. an innovative method for evaluating M&As and the associated synergies, will also be introduced.

2.2 Inside the Income Approach: the DCF Method

The *discounted cash flow* (DCF) method is a valuation model belonging to the income approach of firm evaluation (*Section 2.1*) widely used by investment bankers, corporate officers, university professors, investors, and other finance professionals to estimate the value of companies, divisions, projects, assets and other investments, such as M&A deals. In particular, the DCF analysis allows to determine the intrinsic value of a target, as opposed to market value, becoming a successful tool in verifying the current market valuation of a publicly traded firm (Rosenbaum, 2021). It is considered the most widely adopted evaluation approach due to its ability to incorporate specific information about the firm's profitability, cost of capital, or future growth potential, as well as perform sensitivity analysis (Berk & DeMarzo, 2020).

Due to its multi-year projection, the DCF method allows to forecast future returns that might not be reflective of the company's long-term performance, and to more accurately take into account determinants of changes in return over the forecast period (e.g. revenue or capital expenditure fluctuations). This method is extremely useful for valuing enterprises that are expecting unsustainable growth in the near future, volatile cash flows, or temporary declines due to economic or industry recessions. Moreover, because M&A decisions involve large amounts of money and can have long-term consequences for everyone involved, it is generally applied the discounted cash flow method, unless the company considered has really stable earnings and constant growth is likely (Evans & Mellen, 2018).

The DCF method can be used for both approaches to company evaluation – enterprise value and equity value – but for the purposes of the thesis only the former needs to be focused on.

According to Evans & Mellen (2018), the DCF typically has two stages, but sometimes, especially for early-stage companies, three stages are more appropriate. The first stage involves forecasting a set number of years – the so-called “forecast horizon” – while the second stage involves estimating the terminal value, i.e. the value beyond the forecast period.

The first stage of the DCF method assess the present value of the future cash flows that it is expected to generate over a certain time horizon. The cash flows are forecasted on the basis of assumptions made about company's earnings and ability to generate cash, and then discounted back at a rate that reflects both the riskiness of these cashflows and the financing mix of the firm. Damodaran (2007) defines the enterprise value of a firm according to the DCF as:

$$(2.1) \quad EV = \frac{FCF_1}{(1 + WACC)} + \frac{FCF_2}{(1 + WACC)^2} + \frac{FCF_3}{(1 + WACC)^3} + \dots + \frac{FCF_n}{(1 + WACC)^n}$$

which may also be rewritten as:

$$(2.2) \quad EV = \sum_{t=1}^n \frac{FCF_t}{(1 + WACC)^t}$$

where:

EV = Enterprise value

WACC = Weighted average cost of capital

FCF = Free cash flow

n = Last period in the forecast

In this formula, the forecasted *free cash flows* (FCF) are discounted back to their present value using the *weighted average cost of capital* (WACC) over the *time horizon* (n) – i.e. number of years – that the investment is expected to generate cash flows. In this formula, WACC has been used because it is intended to refer to the rate at which the company has to remunerate all its investors, equity holders and debt holders. However, different discount rate can be used depending on the type of the company and the desired valuation output. For instance, the prospective cash flows of an enterprise financed solely with equity capital can be discounted directly with r_e (cost of equity).

In a DCF analysis, company's free cash flows are generally predicted for a period from five to ten years. However, depending on the firm's industry, growth stage, and the predictability of its financial performance, the projection period could be longer (Rosenbaum, 2021). Since it is difficult to forecast a company's financial performance over an extended period of time, a *terminal value* is used to capture the remaining value of the target beyond the forecast horizon (second stage). In this way, the DCF model is able to assess the intrinsic value of a firm, asset or project over an infinite time horizon. The terminal value usually accounts for a significant portion of the target's value in a DCF, and it is crucial to ensure that the target's financial data in the terminal year represents a normalized level of performance rather than a cyclical peak or trough (Rosenbaum, 2021). That being said, the all-comprehensive formula becomes:

$$(2.3) \quad EV = \sum_{i=1}^t \frac{FCF_i}{(1 + WACC)^i} + \frac{\frac{FCF_{t+1}}{(WACC - g)}}{(1 + WACC)^t}$$

where:

EV = Enterprise value

t = Explicit forecast period

FCF = Free cash flow

WACC = Weighted average cost of capital

g = Long-term growth rate

Here, both components of enterprise value are represented. Firstly, the present value of the forecasted cash flows within a reasonable time horizon, and secondly, the terminal value consisting of the present value of the FCFs for the years $n+1$ onwards (i.e. relating to the forthcoming period after the explicit forecast horizon). Terminal value is obtained by discounting the FCFs, plus or minus the perpetual growth rate g (depending on whether the growth rate is negative or positive), at the WACC rate referring to the year of the last financial statement reduced by the growth rate. The enterprise value is then determined by adding the present value of FCF and terminal value.

Finally, as already mentioned, sometimes the application of a third stage is required in order to make sure that the forecasts are long enough to reflect expected variations in cash flows, including unsustainable levels of growth. So, the three-stage DCF model adds an interim stage between the forecast horizon (e.g. Years 1 to 5) and the long-term period, for example by introducing additional assumptions for Years 6 to 10. Thus, the value of the enterprise is estimated by adding the present value of the cash flows for Years 1-5, the present value of the cash flows for the interim period of Years 6-10, and the present value of the terminal value that reflects the company's ongoing operations.

In certain cases, a fourth stage may be necessary, and different discount rates may be applied to each stage depending on each level of risk (Evans & Mellen, 2018).

2.2.1 DCF Method Determinants

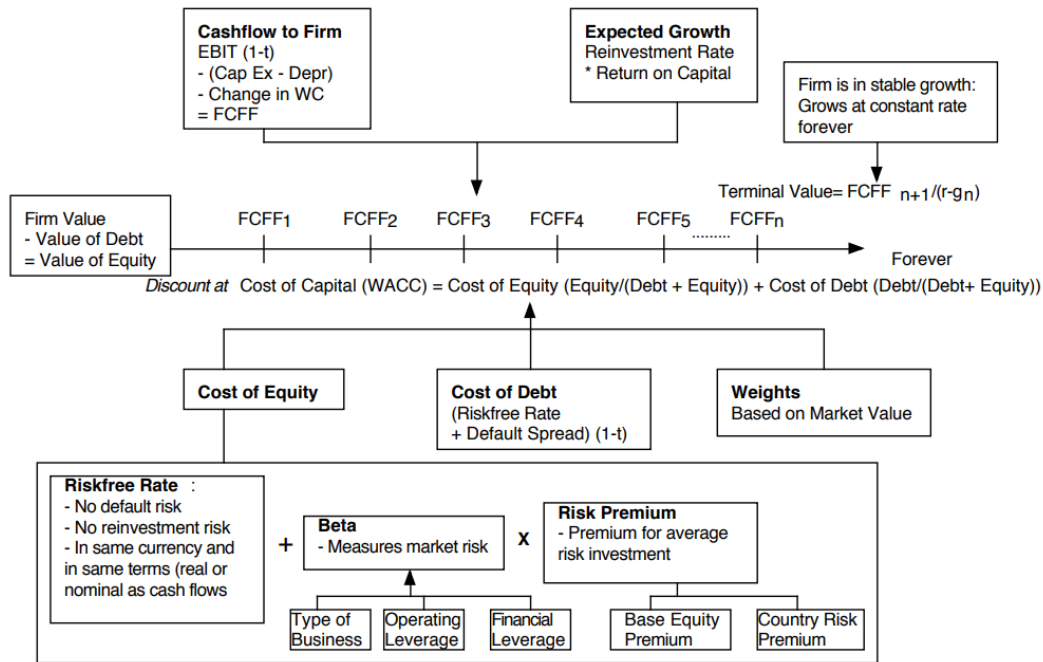
The Discounted Cash Flow method involves the evaluation of several determinants in a series of steps in order to estimate the value of the target company. Indeed, the process of valuing a firm becomes complicated due to the fact that a significant portion of its value is derived from expectations about future investments. Therefore, it is essential to estimate the potential value of future growth and assess each determinant of firm value in order to accurately price a company.

Damodaran (2005) identifies four main determinants for assessing the value of a company in the context of valuation applying the DCF model:

- *Cash flow to the firm;*
- *Expected growth;*
- *Discount rate;*
- *Terminal value.*

These determinants of the value have been illustrated in the figure presented in the chart on page 42.

Figure 2.3: Firm value determinants (DCF model)



Source: Damodaran (2005), *The Value of Control*

The first step in assessing the firm value is to study the target company and identify the key drivers of financial performance (sales growth, FCF generation, profitability, etc.) which help to create a set of projections for the company. Afterwards, the next step is to forecast the cash flows to the firm (FCFF), i.e. the cash generated by a company after paying all cash operating expenses and taxes, as well as the funding of capex and working capital, but before paying any interest expense. The cash flows to the firm take into account returns to both equity and debt investors, and are calculated as follows:

(2.4) *EBIT (1 – Tax Rate)*

+ *Depreciation*

- *Fixed capital Investments (or Capital Expenditures)*

- *Change in Net Working Capital*

= *Free Cash Flow to the Firm*

where another way to refer to EBIT (1 – Tax Rate) is as *net operating profit after tax* (NOPAT).

It is possible to present the same equation in a different way by adding net capital expenditures and changes in net working capital, which gives the total amount of reinvestment (Damodaran, 2005). This can be expressed as a percentage of NOPAT and is referred as the *reinvestment rate*. Using this, the FCFF can be assessed as:

$$(2.5) \text{ FCFF} = \text{EBIT} (1 - t)(1 - \text{Reinvestment Rate})$$

where:

FCFF = Free Cash Flow to the Firm

EBIT = Earning before interests and taxes

t = Tax rate

Another crucial determinant of firm value is the expected *growth rate* of its operating income. When valuing a company using the DCF method, it is important to consider the impact of the growth rate. According to Damodaran (2005), there are two main components of the rate at which revenues grow. The first component is the growth from new investments, which is determined by multiplying the company's reinvestment rate by the return on capital invested. By doing this, it is like to assume that the current return on capital is a reliable measure of the returns that will be earned on future investments. The second factor that contributes to growth is the growth from managing existing investments more efficiently, that can be calculated as:

$$(2.6) \text{ Expected growth efficiency} = \frac{\text{ROC}_{t, \text{ Existing Investments}} - \text{ROC}_{t-1, \text{ Existing Investments}}}{\text{ROC}_{t-1, \text{ Existing Investments}}}$$

where:

ROC = Return on capital

The main difference between the two components of growth lies in their sustainability. Growth from new investments can continue for a long time, as long as the company continues to reinvest at the specified return on capital. On the other hand, growth from existing assets can only occur in the short term, since there is a limit to how efficiently those assets can be utilized.

Furthermore, it is also fundamental to take into account the influence of *long-term growth rate* when calculating the terminal value within the DCF method. Since this model assume that the company's cash flows will grow at this rate indefinitely, an unrealistic growth rate can significantly distort the value of the company. Modest changes in the long-term growth rate can have an explosive effect on the company's value, which should be considered when valuing a company. Factors that affect the growth rate include the general economic conditions, growth expectations for the industry, synergistic benefits that could be achieved in a mergers or acquisitions, the company's historical growth rate, and management's expectations for future growth. Moreover, a good way to consider the perpetuity of the DCF valuation is to start determining the long-term growth rate by considering macroeconomics factors such as population growth and inflation rate (Evans & Mellen, 2018).

Generally, companies with high growth rates reflect competitive advantages that have allowed them to capture market share and grow rapidly. Although these competitive factors suggest that continued high

grow should be expected, this successful performance should logically decline as market forces take over, competitors enter the market, new technologies are introduced, eliminating the company's strategic position. Additionally, long-term growth rates tend to decline as companies increase in size.

The next determinant is the calculation of the *discount rate*, which corresponds to weighted average cost of capital (WACC). As anticipated, the weighted average cost of capital is the discount rate at which the forecasted FCFs and terminal value of the target company are discounted, and represents the minimum rate of return that the company has to generate and pay to those who contribute equity capital and debt capital. Since debt and equity have different risk profiles and tax implications, the WACC is equal to the average of the cost of equity and the cost of debt, weighted by their percentage incidence on firm's financing structure:

$$(2.7) \quad WACC = \frac{E}{E + D} * r_e + \frac{D}{E + D} * r_d * (1 - t)$$

where:

r_e = Cost of equity

r_d = Cost of debt

E = Market value of equity

D = Market Value of debt

t = Firm's corporate tax rate

The cost of equity (r_e) is the rate of return required by equity investors from the firm, while the cost of debt (r_d) is the current cost of borrowing, adjusted for the tax benefits of debt. The cost of equity for a publicly traded company reflects the risk added by the investment to a diversified portfolio and can be measured with beta. Using an inefficient mix of debt and equity or mismatching debt to assets may result in a higher cost of capital and a lower firm value (Damodaran, 2005).

Once the discount rate is estimated and the terminal value is calculated, the forecasted FCF and terminal value are discounted with the weighted average cost of capital and then added up. The resulting enterprise value can be used to derive the implied equity value of the firm as (Rosenbaum, 2021):

$$(2.8) \quad EQ = EV - Net\ debt$$

where:

EQ = Equity value

EV = Enterprise value

The last main determinant of company value refers to *terminal value*. There are various methods for calculating this value, but the most appropriate approach – already shown in *equation 2.3* – is to assume that cash flows will grow at a constant rate in perpetuity. In such a case, the terminal value can be calculated using the following formula:

$$(2.9) \quad TV = \frac{FCFF_{n+1}}{(WACC_{n+1} - g_n)}$$

where:

TV = Terminal value

FCFF = Free cash flow to the firm

g = Long-term growth rate

Since it is not possible for any firm to grow indefinitely at a rate higher than the overall growth rate of the economy, the growth rate must be less than or equal to the overall growth rate of the economy. Similarly, stable growth firms ought to possess an average level of risk (Damodaran, 2005). Therefore, in terminal value estimation, two essential assumptions must be adopted regarding stable growth: the first pertains to the timing when the firm under valuation will attain stable growth, assuming it has not already; the second relates to the firm's characteristics during stable growth.

Lastly, since a DCF valuation involves several assumptions about performance drivers, WACC, and terminal value, different values are typically used to generate a valuation range rather than a single value. With this in mind, sensitivity analysis is usually employed to establish a valuation range by varying key inputs.

2.3 The Market Approach: a Relative Perspective to Valuation

The *relative valuation* or *multiples approach valuation*, as opposed to income-based valuation, determines the value of a company, asset or division by looking at the value that the market attaches to similar or comparable companies, assets or divisions in terms of characteristics (industry, revenue stream, cash flow structure, etc.).

By using the market approach, the value of a company is estimated by identifying, for a group of comparable companies, a relationship between prices and accounting quantities (profits, revenues, equity, etc.) whose average value is assumed to be applicable to the target company. This means that this approach, rather than value the firm's cash flows directly, allows to estimate the value of the target firm on the basis of the value of other, comparable firms traded on public stock exchanges that are expected to generate very

similar cash flows in the future (Berk & DeMarzo, 2020).

For this reason, valuation by the multiples approach is also called “relative valuation method”, since the value – enterprise value or equity value – of a firm is estimated by looking at market values expressed by firms considered comparable to the company under evaluation:

$$(2.10) \text{ Value of the firm} = M * \text{firm's financial measure}$$

where:

M = Multiple

Therefore, the market-based approach to valuation relies on the assumption that stock market prices represent the best approximation of the firm value and is aimed at identifying the relationship that links price with the company's economic variables. Obviously, this assumption implies that the estimated value of the target company will be overestimated/underestimated when the market is overestimating/underestimating the panel of companies selected for comparison.

In this Section, the two main methods of relative evaluation approach will be discussed:

- *Guideline public company method*: it refers to a sample of comparable listed companies and, therefore, to the prices quoted by the stock exchanges, from which multiples are inferred to assess the target company;
- *Transaction multiples method*: it refers to the prices of comparable negotiations or relevant bundles of comparable companies.

2.3.1 Guideline Public Company Method

The *Guideline Public Company* (GPC) Method, also referred as *Comparable Companies Analysis* or *Method of Comparables*, is a method belonging to the market approach to evaluation and representing one of the go-to methods for valuing a target company or a set of assets.

The idea behind GPC method is that by comparing a target firm to public companies that are very similar in terms of business characteristics, performance drivers and risks, it is possible to get a good idea of its value. As a result, they can serve as a relevant reference point to establish a valuation for a specific M&A deal.

Due to its simple nature, this method is widely used for applications like M&A, IPOs, restructuring, and investment decisions (Rosenbaum, 2021). It can be employed independently, but it also functions as a means of ensuring accuracy when utilizing alternative valuation techniques. However, some experts believe that the guideline public company method has no place in valuing private businesses, given the vast differences between public and private capital markets (Evans & Mellen, 2018). Indeed, while trading comps can provide a good estimate of a company's value, it is important to keep in mind that companies

are all different. Furthermore, market conditions and investor sentiment can affect a company's valuation. For these reasons, academics and practitioners recommend to use trading comps in conjunction with other valuation methods, such as discounted cash flow analysis, to get a more comprehensive understanding of a company's value.

The method of comparables starts by selecting a panel of peer companies (“comparable universe”) that are similar to the target. This can be accomplished by using various databases such as Capital IQ or Refinitiv. The initial search generates potential guideline companies, which can be screened based on pre-determined criteria to identify the best 4 to 7 companies to serve as a proxy for the market (Evans & Mellen, 2018). In order to select companies with comparable characteristics and business profiles, it is fundamental to have a solid understanding of the target. In particular, the evaluating party must first and foremost identify the key characteristics of the target for comparison purposes, both from a business (industry, products and services, distribution channels, geography, customers and end markets) and financial perspective (size, growth profile, profitability, return on investment, credit profile and debt levels). This process is called *benchmarking*.

Once a fundamental understanding of the target’s business and financial characteristics is gained, it is then possible to ascertain the universe of comparable firms (Rosenbaum, 2021). Thereafter, the next step regards gathering all the financial information about the comparable companies and figuring out some important financial metrics and ratios. All of this data helps to understand how the comparable firms are doing financially and make informed decisions.

At this point, in order to perform the GPC method, evaluators apply a set of financial ratios (the so-called “multiples”) that use a measure of market valuation in the numerator (e.g. enterprise value or equity value) and a universal measure of financial performance in the denominator (e.g. EBITDA or net income). Depending on whether the value is expressed as enterprise value or equity value, two categories of multiples are used:

- *Asset side multiples*;
- *Equity side multiples*.

For enterprise value multiples (*asset side*), the denominator uses a financial statistic that benefits both debt and equity holders, such as sales, EBITDA, and EBIT. In contrast, for equity value – or share price – multiples (*equity side*), the denominator must be a financial statistic that benefits only equity holders, such as net income (or diluted EPS). Among these multiples, EV/EBITDA and P/E are the most commonly used (Rosenbaum, 2021).

A representation of the different types of multiples used for target company valuation is illustrated in the *Figures 2.1 and 2.2* on the next page.

Table 2.1: Asset side multiples

Numerator	Denominator
Enterprise Value (EV)	SALES
	EBIT
	EBITDA
	NOPAT
	FCFF
	EBITDAR
	INVESTED CAPITAL

Source: *Own creation*

Table 2.2: Equity side multiples

Numerator	Denominator
Equity Value (EQ)	EARNINGS
	BOOK VALUE
	FCFE
	SALES
	EARNINGS TO GROW (E/G)
	DIVIDENDS
	NET ASSET VALUE

Source: *Own creation*

In the selection of multiples, it is also worth considering consistency over time; in this sense, it is possible to distinguish between:

- *Historical multiples (P0/Et-1)*: when comparing current stock market prices with the results of the last available balance sheet;
- *Trailing multiples (P0/Et0)*: when comparing current stock market prices with the last 12 month of actual earnings;
- *Leading multiples (P0/Et1)*: when comparing current stock market prices with the expected results for the next 12 months.

By their nature, historical multiples are indicators of past performance, trailing multiples of current performance, and leading multiples of firm's future value creation.

Once multiples are calculated, the evaluator might eliminate from the panel of comparables the companies which seem overvalued/undervalued compared to the target company. This action enables to remove the companies that are outliers or don't fit well with the others. In this way, it is possible to look only at similar companies to get an idea of the target.

The final step is to apply the multiples to the firm and to adjust for differences across assets when comparing their standardized values. In particular, it may prove necessary to applicate a discount premium, especially in valuations relative to specific strategic operations such as M&A (Damodaran, 2007).

Moreover, in order to derive an appropriate valuation range for a target company, it is recommended to use averages and medians of the most relevant multiples for the sector, such as EV/EBITDA or P/E. This allows to extrapolate a defensible range of multiples.

The high and low multiples of the comparable universe provide further guidance, but the multiples of the best comparables are relied upon as guideposts for selecting the tightest and most appropriate range. This usually involves selecting as few as two or three carefully chosen comparables, with the broader group serving as reference points. The selected multiple range is typically narrower than the range implied by simply taking the high and low multiples for the universe (Rosenbaum, 2021).

2.3.2 Transactions Multiple Method

The *Transaction Multiple Method* (TMM), also known as *Precedent Transactions Method* or *Transaction Comps*, is, like the Guideline Public Company Method, a method which belongs to the market approach of valuation. This methodology is pretty similar to GPC method except that, instead of using industry averages and medians, this method looks at the ratios from similar M&A deals. This means that the appraisers have to use their judgement to decide how important each metric is (Kumar & Sharma, 2019).

In particular, the TMM looks at the prices paid to acquire a controlling interest in a business to determine the implied valuation range for a particular company, division, business, or collection of assets. So, in order to perform this method, it is crucial to select an appropriate panel of comparable acquisitions, by preferring deals that involved companies sharing key business and financial characteristics with the target.

Recently transactions within the previous two or three years are usually the most relevant, but older acquisitions may be appropriate to assess the value if they occurred during a similar point in the target's life cycle or macroeconomic environment.

Compared to trading comps, transaction comps generally provide a higher multiple range (Rosenbaum, 2021). This is mainly due to the fact that buyers typically pay a "control premium" when acquiring another company in exchange for the right to control decisions regarding the target's business and underlying cash flows. Thus, the price paid often reflects investment value to that specific buyer rather than fair market value, which assumes a financial buyer (Evans & Mellen, 2018). In addition, strategic buyers often realize synergies that support the ability to pay higher purchase prices.

In order to yield an appropriate indication of value, the transactional data must relate to companies that are reasonably similar to the one being valued. Moreover, it is extremely important to understand buyer's motivations in a M&A deal (Evans & Mellen, 2018). For instance, buyers may make certain acquisitions purely for defensive reasons, desiring to keep a major competitor out of a market. Similarly, the price paid for a target may seem unusually high in comparison with its potential benefits, but that acquisition may position the buyer to make incremental profits elsewhere.

2.4 The Real Options Approach

The *Real Options approach* is an alternative methodology for the evaluation of M&A transactions, alongside the traditional approaches. It is an innovative framework that allows the dynamic aspect of such types of investments to be considered into assessment.

A real option is *the right to pursue a certain business decision, such as a capital investment or R&D, after new information is learned* (Berk & DeMarzo, 2020). It differs from a financial option because frequently there are no competitive markets for real options, together with the underlying assets.

The main reason for applying this valuation approach in the first place is the fact that it allows the intrinsic uncertainty of such transactions to be considered into evaluation. For this reason, real options valuation bring value to investment opportunities, being particularly adopted for risky investment decisions, including M&A deals, and have a real value under three special conditions:

- uncertainty;
- time dependency;
- exercisability.

Real options are actually suitable in situations of poor or absent information, for medium to long time horizons and in cases where they are effectively exercisable. Moreover, enabling the capture of some dynamics, real options valuation are very suitable to consider the flexibility of managerial decisions over the lifetime of an investment. These characteristics mean that real options can be used to evaluate M&A deals. Within this approach, the total value of the target firm from the acquiring company's perspective is estimated by adding the values of such real options to the total stand-alone value (Kinnunen, 2010).

There are some recurring real options when it comes to M&A decisions, such as expanding, reducing or changing an investment in the future and react to changes in the market environment.. Among these, Kinnunen (2010) presents three main ones:

- *Option to create synergies;*
- *Option to split;*
- *Option to divest.*

Synergies can be viewed as real options that are created in an acquisition on the top of the stand-alone value of the target firm and can be exercised by initial investments or using other resources (Collan & Kinnunen, 2009). Due to the different types of synergies that may arise, it is necessary to conduct a separate analysis for each of them as the risks associated with each may differ. These synergy options include revenue-increasing synergies, cost-reduction synergies, and balance-sheet synergies. A further very recurrent option in mergers and acquisitions is the option to split, i.e. the option to break down the target firm into parts in cases where the company is composed by more business. Such options may be required in contexts of corporate restructuring or when the target company operates in business areas that do not appeal to the purchaser. Finally, in an M&A deal, the buyer has the right of selling off non-essential

segments or assets of the target company, or even ceasing all operations in the event that the acquisition or merger proves to be unprofitable. This option is named option to divest or abandon and is obtained upon the closure of the acquisition deal.

Other relevant options in the case of M&A deals may be the option to expand, the option to grow and the option to delay, which allow for other kinds of dynamism in these kinds of deals to be taken into account.⁸

A variety of methods exist for the evaluation of real options, each of which is better suited to certain types of options rather than others. The first method is represented by the *Black-Scholes-Merton-Model* (BSM), which uses five inputs – stock price, time to maturity, strike price, volatility, and risk-free interest rate – to value options.

Following the BSM model, the formula for pricing a European call option on a non-dividend paying asset is:

$$(2.11) \quad C = SN(d_1) - Xe^{-rT}N(d_2)$$

where:

S = Current stock price of the underlying security

X = Strike price of the option

r = Risk-free interest rate

N = Standard normal distribution

d₁ and d₂ = Probability factors

Similarly, adopting the put-call parity formula, to value a European put option the BSM model introduces the following formula:

$$(2.12) \quad P = Xe^{-rT}N(-d_2) - SN(-d_1)$$

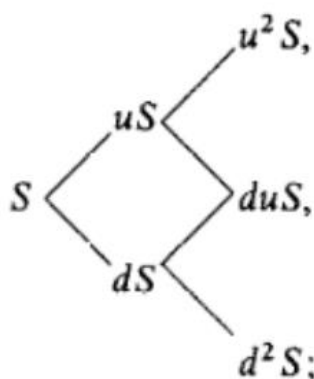
Black & Scholes (1973) start with some basic assumptions, which are (i) the short-term interest rate is known and constant through time, (ii) the stock prices follows a random walk and their distribution is log-normal, (iii) no dividends are to be distributed, (iv) only European options are considered, i.e. options that can only be exercised at maturity, (v) there are no transaction costs, and (vi) it is allowed to borrow any fraction of the price at the short-term interest rate. By reading the assumptions of the BSM model, it is clear that it is rare to find condition in the real world that fulfil these requirements. For this reason, the prices estimated with the BSM model can be influenced by bias. Moreover, although the model is considered

⁸ For a more detailed discussion: Berk, J. B., & DeMarzo, P. M. (2020). *Corporate finance*. Pearson.

among the most effective in evaluation financial options, there are doubts about its applicability to the valuation of real options. Indeed, the Black-Scholes-Merton model relies on the replication of a portfolio, which can hardly be applied to real options since they are not traded on publicly market. Therefore, other valuation models are preferred for the assessment of real options.

A further traditional model for the evaluation of real options is the so-called *Binomial Option Pricing Model*. This model, pioneered by Cox, Ross and Rubinstein (1979), like the BSM model, assess the value of a real option by replicating the payoffs of the option. In particular, this model assumes that the stock price follows a multiplicative binomial process over discrete periods and, for any given period, it may follow two values, by either moving upwards or downwards. Therefore, given S the current stock price, q the probability of going upwards, $1 - q$ the probability of going downwards, u the up factor, and d the down factor, the price at the end of the period could be either uS or dS . This method is based on an iterative process until the maturity of the option is reached, enabling to construct a replicating portfolio that matches the payoff structure of a project or investments, such as a merger or acquisition.

Figure 2.4: Binomial option pricing diagram



Source: Cox, Ross & Rubinstein (1979), *Option pricing: A simplified approach*

Some have tried to shape this model in order to make it as suitable as possible for the evaluation of real options. Among them, Baduns (2013) built a framework combining two binomial trees (also known as lattices): one for the underlying asset and the other for the option itself.

In general terms, binomial method produces outcomes and limitations that align with those generated by the Black-Scholes-Merton model. In particular, although the binomial option pricing model offers more flexibility since it permits to modify inputs at each step, it could be complex to construct, especially in cases in which a large number of periods is involved and substantial computational resources are required.

Another real options valuation approach is the *Monte Carlo Simulation Model*, that relies on risk-neutral principles. This approach values the real options by discounting their expected value, taking into account rational pricing. The simulation involves four main steps: (i) splitting the maturity of the security

into intervals, generating a large number of random price paths; (ii) calculating the corresponding exercise value of the option for each path; (iii) computing the average of the payoffs, and (iv) discounting back the resulting value to the present, yielding the final option value. Monte Carlo simulation is an accurate and robust method for valuing real options, and it allows to combine different types of real options. Therefore, this method proves to be suitable for multi-dimensional investments and flexible to accommodate a large number of real life situations (Gamba, 2003).

The above-mentioned methods are the most commonly used methods for option valuation. However, alongside these methods, there have been developed others that are more suitable for evaluating synergies generated by M&A deals. Out of these, the *Datar-Matthews Method* (DMM) can be considered the most fitting in merger and acquisition contexts. This model provides a simple approach, making it easy to understand and apply to various types of investments. It offers also transparency, allowing investors to see through the process and gain clarity and versatility, enabling a more comprehensive and insightful assessment of the investment's overall value. The DM method uses the aforementioned Monte Carlo simulation to estimate the probability distribution of the project's net present value. From this distribution, it then calculates the real option value, taking into consideration the different potential outcomes.

This theory is developed in three steps (Mathews, Datar & Johnson, 2007). The first step involves scenario planning, including the creation of three distinct scenarios: pessimistic, most-likely, and optimistic. In these scenarios, cash flows are assigned probabilities to reflect their likelihood and different market conditions. Hence, the range of outcomes of these scenarios forms a triangular distribution, in which the three estimates can be devised as the corners of the triangle. It serves as a representation of the varying possibilities and the potential fluctuations that can occur in the annual profits, emphasizing the uncertainty surrounding these profits.

To create the triangular distribution for each year, Datar and Mathews utilized specialized Monte Carlo software, which enables to translate the uncertainties analysed during scenario planning into the variability of project cash flows. The number of trials can be freely determined, but a comprehensive simulation analysis typically involves running hundreds to thousands of trials (Mathews, Datar & Johnson, 2007). Once the distribution is obtained, it goes on to estimate the appropriate discount rate for cash flows, which will be applied to discount the operating profit for each trial. Real options give the possibility of applying different discount rates that precisely capture the risks associated with each cash flow.

The real option value with DM method is derived from the net profits and losses observed in all scenarios. It represents a refined estimation of the project's overall profitability, accounting for the decision to halt operations if a projected loss becomes likely. Thus, Mathews, Datar & Johnson (2007) estimate the real option value by the following formula:

$$(2.13) \quad ROV = p * (B - C)$$

where:

ROV = Real Option Value

p = Risk-Adjusted Success Probability

B = Benefits

C = Costs

The benefits are determined by calculating the weighted average of the successful outcomes, considering both their significance and likelihood. On the other hand, the costs refer to the estimated integration costs involved in the acquisition process.

2.5 Measuring Synergies in M&A Deals

Additional factors contributing to the value of M&A deals are the synergies arising from these sorts of investments. In this regard, it should be recalled that the value of an M&A deal is measured by the sum of: (i) the stand-alone value of the target company, (ii) the synergies, and (iii) the value of the control resulting from the execution of the transaction.

Many companies that merge or acquire other companies cite synergy as a reason for doing so. Synergy refers to the increase in performance that can arise from combining the operations of two companies, such as cost savings or increased efficiency, over what the two firms are already expected or required to accomplish as independent entities (Damodaran, 2008). For this reason, synergies are often defined as *the combination of businesses that makes two plus two equal five or the wonderful integration benefits from combined strategies and economies of scale* (Evans & Mellen, 2018).

The synergy value is typically created by the buyer. However, in certain circumstances the value of synergies may be created primarily by the selling company which can, for example, possess a technology or proprietary process that the buyer can adapt and employ over its larger volume base (Evans & Mellen, 2018). The occurrence of synergies leads to the value of the combined firms being greater than the sum of the stand-alone values of the two companies. This is why the following inequality is often referred to when talking about synergies (Damodaran, 2005):

$$V(AB) > V(A) + V(B)$$

where:

$V(AB)$ = Value of the firm AB created by combining firm A and B

$V(A)$ = Stand-alone value of firm A

$V(B)$ = Stand-alone value of firm B

Synergies are often the rationale for buyers being willing to pay a premium for the acquisition of the target firm. Thus, the decision presumes that it is in the shareholders' best interest to pay this premium in advance based on management's ability to deliver the expected synergies. If most of the value-creating potential from the acquisition is paid to the sellers in the form of a premium, little potential value creation exists for the acquiring firm.

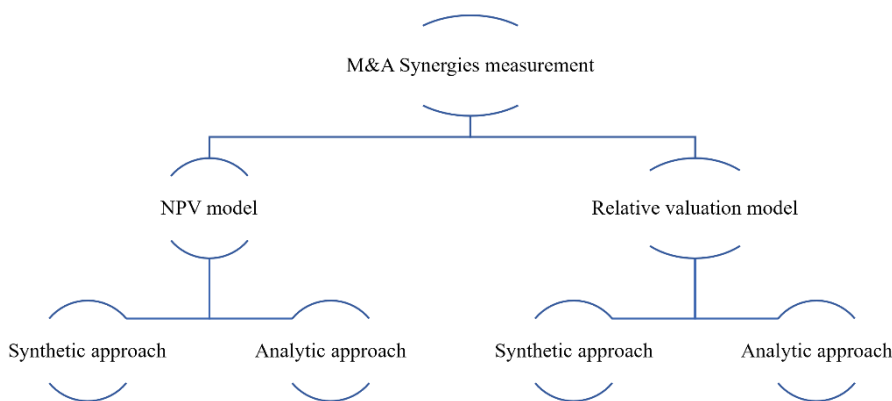
Basically, two different types of synergies can be identified: (i) operating synergies and (ii) financial synergies. *Operating synergies* have an impact on the functioning of a combined company and encompass advantages such as economies of scale, greater pricing leverage, and heightened potential for growth. Such synergies include, for example economies of scale and scope, strategic advantages and vertical integration. In contrast, *financial synergies* are more targeted in nature and involve benefits such as tax advantages, diversification, expanded capacity for debt, and the ability to allocate excess funds.

According to Fiorentino & Garzella (2013), models for evaluating expected synergies fall into two categories, reminiscent of models for assessing the stand-alone value of companies (*Section 2.1*).

On one side, the *Net Present Value* (NPV) model, considers each type of synergy separately and is suitable for representing specific dimensions of corporate strategy and organizational structure. The value of synergies in this approach is the present value of the expected synergy flows from the deal process discounted back at a rate that reflects their riskiness. This approach includes models based on both earnings and cash flow metrics. On the other side, the *Relative Valuation* model values synergies based on how similarly they are priced in the market. In other words, this approach estimates the value of synergies by comparing the expected synergy flows to a specific variable taken as a constant for similar firms or deals. This approach includes models based on both multiples and comparable transactions.

Both models – NPV model and Relative Valuation model – may be applied using two different paths: analytical or synthetic. The *synthetic* approach aims to assess the overall value of synergy without evaluating individual synergies, while the *analytic* approach assesses the individual synergy flows in a merger or acquisition by calculating specific future synergy flows.

Figure 2.5: M&A synergies valuation



Source: *Own creation*

To assess synergies, the specificities of each type of them must be taken into account. Damodaran, in his paper “The Value of Synergy”, sets out a number of arrangements to be used to incorporate, within the value of the deal, the value of synergies that may be expected by the M&A deal. Very intuitively, the Professor suggests employing a higher growth rate if the deal is believed to generate growth synergies, such as higher returns on investments, greater investment opportunities or improved market position. Similarly, it is recommended to apply higher margins for deals where economies of scale and scope are estimated, and lower taxes in cases in which, as a result of the merger or acquisition, the resulting company may enjoy tax advantages. As far as financial synergies are concerned, Damodaran (Professor of Finance at the Stern School of Business at New York University) also advises to use lower cost of debt and higher debt ratio when the M&A deal allows the conglomerate to benefit from a higher debt capacity.

In addition, Florentino and Garzella (2015) state that the value of potential synergies is equal to the expected synergy flows obtained from a merger or acquisition, discounted back at a rate that reflects the riskiness of the occurrence of synergies. At this stage, the synergy value can be inferred by subtracting integration costs from the value of potential synergy.

Ultimately, some experts believe that the value of synergies in M&A deals can be better interpreted and valued as real options – rather than through the DCF model – due to their high uncertainty and irreversibility (*Section 2.4*).

2.6 The Value of Corporate Control

Damodaran (2005) includes the value of corporate control as a further variable influencing the valuation of an M&A deal, in addition to the target’s *status quo* valuation and the synergy assessment. This is rational assuming that the value of a company relies on choices made by its managers regarding several aspects, such as resource allocation, investment strategies, financial decisions, and the appropriate level of equity to be distributed back to the company’s stakeholders. Therefore, when assessing the value of a company as a part of an M&A deal, it is crucial to account and make certain assumptions about the individuals who will be entrusted with managing it and the patterns whereby they will fulfil their managerial responsibilities.

Within this framework, the value of control an enterprise lies in the possibility of managing it in a more profitable fashion and arises from the belief that the new management would run the company differently from how it is currently run. Acquiring poorly managed firms and replacing the existing management team, or implementing changes in policies and practices, has the potential to enhance the value of these firms. So, the value derived from taking control of a firm stems from the power to make changes to its existing management policies, which can ultimately lead to an increase in the firm’s overall value. In his “The Value of Control” paper, Damodaran evaluate the expected impact of a company’s change of control directly by using the following formula:

$$(2.14) \text{ Value of control} = E * p$$

where:

E = Effect of the change in control

p = Probability of the change in control

An alternative method for estimating the value of changing management of a company is indirectly. In this case, the value of the change in control is assessed as the difference between an optimal and a *status quo* value:

$$(2.15) \text{ Value of control} = \text{Optimal firm value} - \text{Status quo value}$$

The *optimal* value is the value of the company as if it were optimally managed, while the *status quo* value is the value assessed of the firm based on current management and business practices. It is important to highlight that this particular process should not be confused with synergies, whose evaluation has been discussed in *Section 2.5*. Unlike control, which can be attained by an individual who acquires a poorly managed company and streamline its operations, synergy requires the involvement of both the acquiring and target firm.

The path to achieving the value enhancement through the change in control can vary greatly across different firms. In situations where the management of existing assets is lacking, the crucial step towards increasing values involves enhancing the efficiency of those assets, that may require divesting some poorly performing assets. This is reflected in an increase in operating margin and return on capital, and a surge in the firm's growth rate. Moreover, if the current management is reluctant to grasp opportunities for growth, a possible fix action is to reinvest more in new promising investments, leading to a higher growth and reinvestment rate. Conversely, if the existing management is over investing, i.e. it is investing in projects or assets that are destroying the value of the firm, the succeeding management could reduce the reinvestment rate as a corrective measure.

A further case in which a change in company control can lead to a benefit is when the management of the firm to be acquired is too conservative in its use of debt. Therefore, the entering management could overcome this deficiency by increasing debt financing with the effect of increasing the debt ratio and cost of capital. However, in the opposite case, i.e. for firms characterized by strong investment policy but flawed financing practices, the key to value enhancement lies in adjusting the mix of debt and equity and reducing the overall cost of capital.

An increase in value following a change in a firm control can also occur when the existing management uses wrong type of financing implying that the cost of debt is higher than reasonable levels. One potential route to solve this type of issue may be the adoption of swaps, derivatives or refinancing,

which allows to lower either cost of debt and cost of capital, resulting in a higher firm value. The last situation Damodaran (2005) analyses is the one in which the firm holds a large percent of firm value in cash and marketable securities. In this case, nevertheless it leads to a reduction in firm value equal to the cash paid out, the answer is to return cash to stockholders, either as dividends or stock buybacks, resulting in a gain for the stockholders because the liquidity was discounted in the firm's hands.

Finally, the value of control is often associated with hostile takeovers. In such cases, the acquiring company takes control and implements necessary changes to the target company's operations.

In order to effectively carry out hostile takeovers, the target firm should show some characteristics, such as having underperformed compared to other companies operating in the same market. In addition, in the event of the company being listed on publicly traded markets, other signals for being a potential target for a hostile takeover may be a lower share price relative to that of similar firms in the same industry or a low percentage of the company's shares held by insiders (Damodaran, 2008).

With the description of the value of control and its valuation, the presentation of the three components (*status quo* value, synergy value, and value of control) that determine the value of an M&A deal from the buyer's side ends. In Chapter 3, this evaluation approach will be applied using a practical case study of a recent acquisition deal.

CHAPTER III

Application of the Methodology Proposed to the GrandVision – EssilorLuxottica Case Study

“From there, we achieved a new milestone, welcoming GrandVision into our family this year. Three leaders (Essilor, Luxottica and GrandVision, ed.) who share a commitment to bringing the best eyewear and eyecare to people everywhere now make up one single champion. Today, we are ready to fulfill our promise to grow the industry by creating new categories and entering new markets.”

*Leonardo Del Vecchio (1935-2022), Executive Chairman of EssilorLuxottica
(EssilorLuxottica 2021 Universal Registration Document)*

The third chapter of this Master’s thesis presents a practical case study about M&A deal valuation by providing an analysis of a real and relevant transaction. In particular, this final part investigates the measurement of M&A synergies by using the Real Options approach, in order to capture the dynamic nature of this component of deal value.

For the purposes of the thesis, EssilorLuxottica’s acquisition of GrandVision, announced in July 2019 and finalized in 2021, was selected as case study. This transaction has been chosen mainly for two reasons: first, because it represents one of the most relevant in recent years; second, because it is a perfect fit for assessing synergies arising from it.

To ensure accuracy and truthfulness in the evaluation, it is worth noting that the assessment of the case study transaction has been carried out with an *ex-ante* standpoint. This means that the evaluation presented hereafter is relied upon information that was known and available before the acquisition was announced. Since the deal was announced in July 2019, no information or data available after that date was taken into consideration for the purpose of the deal evaluation.

3.1 Presentation of the Deal

On July 31, 2019, EssilorLuxottica (hereinafter also “Essilux”) made a public announcement regarding an agreement with HAL Optical Investments B.V. (“HAL”), a wholly-owned subsidiary of HAL Holding N.V., concerning the acquisition of HAL’s 76.72% ownership interest in GrandVision N.V. (“GrandVision”).

To secure the refinancing of a portion of the payment associated with the acquisition of GrandVision,

including certain indebtedness of the acquired company, Essilux opted for the execution of a loan agreement, referred to as the “Bridge Agreement”, with well-established global financial institutions. The bridge loan, initially set at a maximum of €8 billion on July 30, 2019, was subsequently reduced to €3 billion after the bond issuance on November 20, 2019. The issuance consisted of several tranches with varying tenors and coupon rates:

- The first tranche, with a tenor of 3.5 years, had an exceptional feature of 0% coupon, resulting in a negative yield of -0.02%;
- The second tranche, with a tenor of 5.5 years, ensured a coupon of 0.125%;
- The third tranche, with a tenor of 8 years, gave holders a coupon of 0.375%;
- The fourth tranche, with a tenor of 12 years, had a feature of 0.750%.

The 5.5, 8 and 12-year bonds comprise an acquisition event call option, which remained valid until July 30, 2021. This option allowed its exercise in full at 101% of the par value.

The bond offering generated substantial interest, with the final orderbook surpassing €13 billion, demonstrating the strong confidence institutional investors had in EssilorLuxottica’s business model and credit profile, and in the successful acquisition of GrandVision. The bonds were admitted for trading on Euronext Paris on November 27, 2019, following the settlement date.

According to the terms of the acquisition agreement, EssilorLuxottica was expected to acquire HAL’s shares at a price of €28 per share. However, if the acquisition’s closing had not occurred within 12 months from the date of the announcement, the price would have increased by 1.5% to €28.42.

The transaction has received full support from GrandVision, as evidenced by the terms outlined in a support agreement with Essilux. Therefore, it can be referred to as a friendly takeover.

The closing of the acquisition was subjected to several conditions, one of which involved obtaining antitrust clearance from eight jurisdictions: the European Union (EU), the United States (US), Brazil, Chile, Colombia, Mexico, Russia, and Turkey.

Upon the successful completion of the deal, EssilorLuxottica would have proceeded with a mandatory cash public offer, adhering to the applicable Dutch public offer rules, encompassing all of GrandVision’s outstanding shares.

On July 1, 2021, EssilorLuxottica successfully completed the acquisition of 195,203,728 GrandVision’s shares at a price of €28.42 per share in cash, representing a total consideration of approximately €5.5 billion. Following this transaction, the Group held around 76.72% of the issued ordinary shares of GrandVision.

The acquisition was executed based on the block trade agreement (BTA) previously entered into with HAL. Following the completion of the transaction as per the BTA, Essilux attained *predominant control* over GrandVision. Consequently, EssilorLuxottica was obligated to initiate a mandatory public offer for all outstanding shares of GrandVision, in adherence to the applicable Dutch public offer regulations.

On September 7 and 20, 2021, EssilorLuxottica acquired 16,902,305 and 8,431,388 GrandVision

ordinary shares, respectively, from various shareholders represented by a single broker. These shares were purchased at the same price initially paid by Essilux under the BTA, which amounted to €28.42 per share and was settled in cash, amounting to a total of €720 million. At that date, the aggregate stake in the share capital of GrandVision held by EssilorLuxottica reached 220,537,421 shares, representing approximately 86.67% of GrandVision's share capital.

Subsequently, on October 7, 2021, EssilorLuxottica and GrandVision jointly announced the commencement of the recommended mandatory public offer to all holder of GrandVision's ordinary shares, setting the offer price at €28.42 per share in cash. GrandVision's Board unanimously supported and recommended the offer⁹.

The offer acceptance period commenced on October 8, 2021, and concluded on December 3, 2021. Throughout this period, 33,225,412 GrandVision ordinary shares were tendered under the offer, representing approximately 13.06% of GrandVision's share capital and an aggregate value of around €944 million (settled in cash on December 8, 2021).

Following the acceptance period, a post-acceptance period was introduced on December 7, 2021, which concluded on December 20, 2021. During this period, 268,744 GrandVision's ordinary shares were tendered under the offer, representing about 0.11% of GrandVision's issued share capital, with an aggregate value of approximately €8 million (settled in cash on December 23, 2021).

Upon completion of the offer, EssilorLuxottica directly held 254,031,577 ordinary shares of GrandVision, constituting 99.84% of GrandVision's share capital and 99.89% of its issued and outstanding shares.

The transaction meets the definition of business combination as provided for in IFRS 3, "Business Combinations"¹⁰, and has been accounted accordingly in EssilorLuxottica's consolidated financial statements as of the acquisition date. The fair-value of the consideration transferred – determined in accordance with IFRS 3 – was determined to be €7.2 billion. Consequently, the acquisition led to the recognition of €2 billion in tangible and intangible assets, net of liabilities assumed, and a provisional goodwill of €5.4 billion.

As EssilorLuxottica acquired over 95% of the outstanding shares of GrandVision, the newly-formed Group announced its intention to delist GrandVision's shares from Euronext Amsterdam. Additionally, they initiated a compulsory procedure to buy out the remaining minority shareholders of GrandVision who did not tender their shares under the offer. The compulsory procedure, initiated on December 22, 2021, offers the remaining shareholders the offer price of €28.42 per share.

Euronext approved the delisting of GrandVision's shares from Euronext Amsterdam, which was finalized on January 10, 2022, with the last trading day on January 7, 2022.

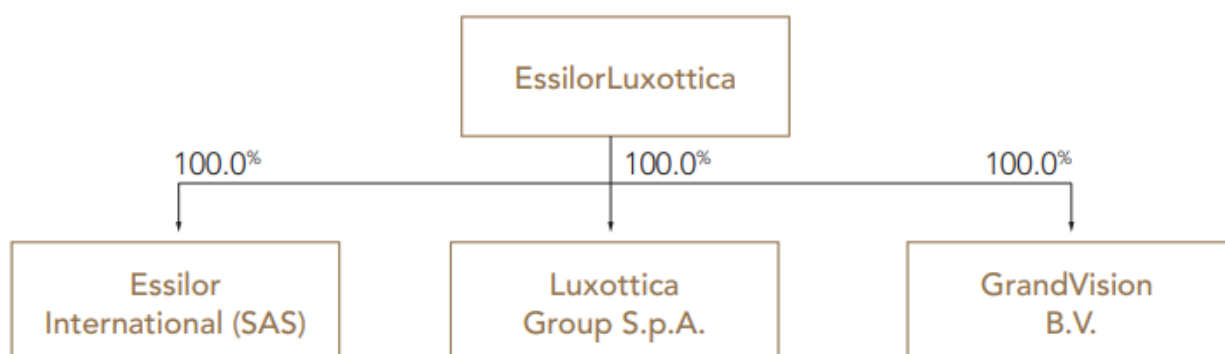
⁹ *GrandVision supports EssilorLuxottica in acquiring HAL's 76.72% interest in GrandVision*, GrandVision Press Release (July 31, 2019)

¹⁰ The IFRS 3 defines a *business combination* as "a transaction or other event in which an acquirer obtains control of on or more businesses".

On April 14, 2022, EssilorLuxottica and GrandVision jointly announced the successful completion of the statutory buy-out procedure, which had been initiated on December 22, 2021. The primary objective of this procedure was the acquisition of 100% ownership of the issued share capital of GrandVision, corresponding to a global amount of approximately €12 million. During this process, any remaining minority GrandVision’s shareholders were given the opportunity to accept the offer price, set at €28.42 per share, along with financial interests as per the applicable regulations.

As a result of the completed statutory buy-out procedure, EssilorLuxottica now holds 100% of the outstanding shares of GrandVision.

Figure 3.1: EssilorLuxottica’s Corporate Structure as at December 31, 2022



Treasury stock accounted for 0.50% of capital.

Source: EssilorLuxottica (2023), *Universal Registration Document 2022*

3.1.1 Antitrust Approvals and European Divestments

During 2019 and 2020, the Proposed Acquisition of GrandVision by EssilorLuxottica received unconditional clearance from antitrust authorities in several countries, including the United States, Russia, Colombia, Mexico, and Brazil.

In the first half of 2021, the Proposed Acquisition obtained clearance from the remaining antitrust authorities:

- On March 23, 2021, the EU Commission granted its final approval on the transaction, contingent on the condition of divesting optical retail businesses in certain regions. These regions include Belgium (35 stores from the “GrandOptical” chain, excluding the banner), the Netherlands (142 stores from the “EyeWish” chain, along with the banner), and Italy (174 stores from the “VistaSi” chain, along with the banner, and the “GrandVision by” chain, excluding the banner);
- On April 9, 2021, the Chilean market regulator FNE (Fiscalía Nacional Económica) cleared the Proposed Acquisition after receiving a commitment to divest GrandVision’s Chilean operations

under “Rotter Y Krauss” banner¹¹. GrandVision divested its Chilean operations on July 1, 2021, prior to the initial acquisition;

- On June 10, 2021, the Turkish Competition Authority (TCA) provided its clearance following certain behavioural commitments made by Essilux concerning its business conduct in Turkey.

With the approval from the Turkish Competition Authority, all necessary regulatory clearances for the completion of the Proposed Acquisition were obtained.

Following the commitments agreed upon with the European Commission, EssilorLuxottica, GrandVision, and Vision Group, one of the prominent distribution networks for Italian optician, and a retailer player operating under the VisionOttica banner, jointly announced on December 17, 2021, their agreement which had as its object the purchase of the entire VistaSì chain in Italy by Vision Group, including the brand and all 99 stores, along with 75 GrandVision stores located in the country. The transaction was finalized on March 2, 2022.

Similarly, on December 23, 2021, EssilorLuxottica, GrandVision, and Optic Retail International Group BENE (a member of MPG Austria, known as ORIG/MPG) entered into an agreement aimed at the purchase of 35 GrandOptical stores by ORIG/MPG in Belgium, in addition to 142 EyeWish stores in the Netherlands. The deal was finally concluded on April 4, 2022.

3.1.2 Arbitration Process

On July 18, 2020, EssilorLuxottica took legal action by initiating proceedings before a District Court in Rotterdam with the aim of obtaining information from GrandVision about how the retail chain handled its business during the Covid-19 crisis and whether it adhered to its obligations under the Support Agreement.

Since the EssilorLuxottica’s request for information disclosure from both HAL and GrandVision was dismissed by the Dutch District Court, Essilux has decided on September 4, 2020, to appeal against this judgement, seeking the disclosure of information from GrandVision. The dismissal was confirmed on April 6, 2021 by the Court of Appeal of Amsterdam, due mainly to the disclosures ordered in the arbitral proceedings brought by HAL and GrandVision.

On the other hand, on July 30, 2020, GrandVision and its majority shareholder, HAL Optical Investments B.V., launched an arbitration process against EssilorLuxottica. In these proceedings, they sought the Tribunal’s determination that they have not breached their contractual obligations and requested an order for EssilorLuxottica to fulfil its own obligations.

On June 21, 2021, those proceedings were solved in favour of EssilorLuxottica. The arbitral tribunal determined that GrandVision had not complied with its obligations under the Support Agreement¹². As a

¹¹ *GrandVision announces carve-out of Rotter Y Krauss as part of Chilean market regulator approval for transaction between EssilorLuxottica and HAL*, GrandVision Press Release (April 12, 2021).

¹² *Update on arbitration proceedings between EssilorLuxottica and GrandVision*, GrandVision Press Release (June 21, 2021).

result of this ruling, Essilux had the option to either terminate the GrandVision acquisition or proceed with it. Considering the strategic relevance of the acquisition, EssilorLuxottica decided to move forward and successfully complete the transaction on July 1, 2021. No further legal actions were ever pursued.

3.1.3 The Eyecare and Eyewear Industry

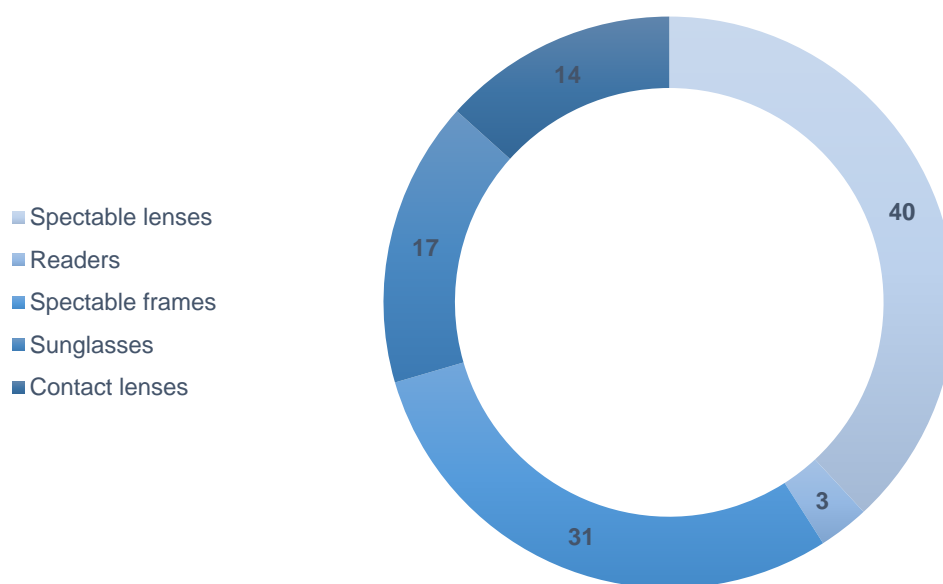
At the end of 2018, the global eyecare and eyewear industry stood at approximately €105 billion in terms of consumer prices, and it has been witnessing a steady long-term growth rate of nearly 4% per year.

This industry consists mainly of five distinct segments:

- Ophthalmic lenses;
- Contact lenses;
- Spectacle frame;
- Sunglasses;
- Readers.

Growth has been consistently distributed across all segments, except for sunwear, which has experienced a slightly more rapid expansion.

Figure 3.2: Segmentation of eyecare and eyewear industry by value (billions of €) as at December 31, 2022



Source: EssilorLuxottica (2019), *Universal Registration Document 2018*

Growth has been consistently distributed across all segments, except for sunwear, which has experienced a slightly more rapid expansion. Below are the main features for each segment.

Ophthalmic lenses

According to EssilorLuxottica estimates, the global ophthalmic optics market accounted in 2018 for roughly 1.4 billion lenses per year, catering to around 700 million consumers annually. As of 2018, there were 2.5 billion people who suffer from uncorrected poor vision¹³. Corrective lenses constitute approximately 75% of vision correction worldwide and consumers typically acquire glasses approximately every three years to address vision issues like myopia, hyperopia, presbyopia, and astigmatism.

Manufacturers utilize raw materials created by glass manufacturers for mineral lenses or chemical companies for polymerizable thermoset resins and injectable thermoplastic resins used in plastic lenses. Their production plants yield both finished lenses for simple eyesight corrections and semi-finished lenses for more intricate prescriptions.

Prescription laboratories play a vital role in the process, taking the semi-finished lenses with only the front surface completed at the plants and transforming them into fully finished lenses in strict accordance with opticians' and optometrists' specifications. This customization allows them to offer a wide array of correction combinations, particularly addressing presbyopia.

Additionally, this segment comprises the design of a range of optical instruments for opticians and eyecare professionals. They also manufacture equipment, primarily machines for surfacing and antireflective coatings, and provide consumables to prescription laboratories.

Contact lenses

Contact lenses are thin plastic discs mainly composed of hydrogel or silicone hydrogel material. Depending on the type, they can either be disposed of daily or replaced at regular intervals (every two weeks or once a month).

These products serve as the primary alternative to traditional corrective lenses when addressing visual acuity issues, particularly myopia, and constitute approximately 10% of vision correction solutions worldwide¹⁴.

Readers

Readers refer to non-prescription reading glasses available at specialty retailers, including pharmacies, mass retailers, and optical outlets. These eyewear solutions cater to close-up viewing, especially as presbyopia begins to manifest, accounting for around of 10% of vision correction requirements¹⁴.

Spectacle frames

Spectacle frames serve as the apparatus in which ophthalmic lenses are commonly set, either mounted into the frames or affixed in a rimless manner. In 2018, the global market for spectacle frames was estimated to

¹³ EssilorLuxottica (April 10, 2019), *Universal Registration Document 2018*.

¹⁴ EssilorLuxottica (April 10, 2019), *Universal Registration Document 2018*.

be slightly over 600 million units¹⁴.

Frames typically come in two main materials: metals and plastics (injected or acetate), offering a plethora of design options for both regular eyeglass frames and sunglasses frames.

For metal frames, the production process starts by creating basic components like rims, temples, and bridges through moulding. These components are then meticulously welded together in multiple stages of assembly work to form complete frames. Once assembled, the metal frames undergo various coatings to enhance their durability and finish.

On the other hand, plastic frames are crafted using either a milling or injection moulding process. In the milling process, computer-controlled machines carve frames from coloured acetate slabs, resulting in rims, temples, and bridges that are subsequently assembled and finished. In the injection moulding process, plastic resins are liquefied and injected into moulds, forming the necessary parts that are then assembled, coated, and finished.

Sunglasses

Sunglasses primarily consist of a frame combined with solar lenses, although they can also be outfitted with prescription sun lenses, which, at 2018, made up a relatively small portion of the market. In 2018, the global sunglasses market was estimated to be approximately 400 million units¹⁵.

Retailers and optical chains

Eyecare and eyewear products are strategically marketed through multiple channels, encompassing independent eyecare professionals and optometrists, cooperatives, retail optical chains, central purchasing agencies, duty-free chains, specialty stores, and e-commerce platforms.

3.2 Presentation of the Buyer – EssilorLuxottica

EssilorLuxottica is as of mid-2019, even before the announcement of GrandVision's share acquisition, a fully integrated enterprise which stands as a worldwide frontrunner in the realm of designing, manufacturing, and distributing ophthalmic lenses, frames, and sunglasses. The company's strength lied in bringing together the complementarity expertise of two industry pioneers: one excelling in advanced lens technologies (Essilor) and the other leading eyewear manufacturer (Luxottica). By uniting these capabilities, EssilorLuxottica has forged a vertically-integrated business, uniquely positioned to cater the dynamic vision needs of the customer base and meet the ever-growing demand of the eyecare and eyewear industry on a global scale.

¹⁵ EssilorLuxottica (April 10, 2019), *Universal Registration Document 2018*.

The Group was officially founded on October 1, 2018, when Delfin S.à.r.l. (“Delfin”), Del Vecchio's Luxembourg-based holding company which held the majority shareholder of Luxottica Group S.p.A. (“Luxottica”), and Essilor International (Compagnie Générale d’Optique) joyfully announced the successful completion of their merger. This event has created a growing appetite and demand for premium branded frames with a positive impact on the eyewear industry globally.

As of the date of GrandVision’s acquisition, EssilorLuxottica owned a portfolio of globally popular vision care and eyewear brands. This diverse portfolio encompassed both proprietary and licensed brands, catering to a wide range of market segments. As a result, it offered exceptional products and experiences that set new standards within the industry. The Group’s main product/service lines include:

- *Lens Technologies*: EssilorLuxottica’s unwavering commitment to lens technology innovation has resulted in the development of lens brands that consistently rank among the highest in terms of consumer satisfaction. Currently, the company proudly boasts an unparalleled portfolio of proprietary brands, including renowned names like Varilux, Transitions, Crizal, Ray-Ban, Oakley, Eyezen, and Xperio. Moreover, through successful partnerships with industry leaders like Nikon, EssilorLuxottica effectively distributed specific technologies that cater to the unique needs of every individual consumer. Simultaneously, EssilorLuxottica had established itself also as a pioneer in designing cutting-edge equipment and solutions used by opticians, optometrists, and ophthalmologists worldwide: in this sphere, the Company’s offerings encompassed a wide range of specialized tools, including lens surfacing and coating equipment, sophisticated instruments for refraction, diagnostic and imaging purposes, precision measurement devices, edging and mounting tools, and a comprehensive suite of sales support services;

Figure 3.3: EssilorLuxottica’s Lens Technologies Brand Portfolio as at December 31, 2018



Source: EssilorLuxottica (2019), *Universal Registration Document 2018*

- *Eyewear brands*: EssilorLuxottica have significantly shaped the eyewear industry, transforming it to a coveted fashion accessory. As of 2018, the Company could boast of an exceptional portfolio of proprietary eyewear brands, which includes iconic names like Ray-Ban, Oakley, Vogue Eyewear, Persol, Oliver Peoples, Alain Mikli, Arnette, Bolon, and Costa. In addition,

EssilorLuxottica held licensing agreements with esteemed fashion houses such as Giorgio Armani, Burberry, Bulgari, Chanel, Dolce&Gabbana, Ferrari, Michael Kors, Prada, Ralph Lauren, Tiffany & Co., Valentino, and Versace.

Figure 3.4: EssilorLuxottica’s Eyewear Brand Portfolio as at December 31, 2018

			BOLON
	BURBERRY	BVLGARI	CHANEL
		DOLCE & GABBANA	EMPORIO ARMANI
	FOSTER GRANT.	GIORGIO ARMANI	LUXOTTICA
MICHAEL KORS			
OLIVER PEOPLES OOVVVV		POLO RALPH LAUREN	PRADA EYEWEAR
RALPH LAUREN		Sferoflex	STARCK BIOTECH PARIS
TIFFANY & CO.		VALENTINO	VERSACE
VOGUE EYEWEAR			

Source: EssilorLuxottica (2019), *Universal Registration Document 2018*

- *Retail*: as of the date of the acquisition of GrandVision, EssilorLuxottica’s retail network counted over 10 thousand stores, each offering top-tier vision care and an unparalleled shopping experience for patients and consumers alike. Within these stores, cutting-edge digital eye exam technology ensures precision, while carefully curated eyewear trends cater to every individual's preferences and needs. EssilorLuxottica’s online platforms have also allowed the Group to connect with a wider audience of consumers, ensuring the distribution of exceptional optical products while providing valuable information about the significance of vision and available solutions. EssilorLuxottica's brick-and-mortar retail network comprised renowned banners such as LensCrafters, Pearle Vision, Sears Optical, OPSM, Salmoiraghi & Viganò, Óticas Carol, Óticas Visión, Sunglass Hut, Ray-Ban, and Oakley. To complement these physical stores, Essilux has established best-in-class e-commerce platforms, including Ray-Ban.com, Oakley.com, SunglassHut.com, EyeBuyDirect.com, FramesDirect.com, Coastal.com, and Vision Direct (in Europe).

Figure 3.5: EssilorLuxottica's Retail Brand Portfolio as at December 31, 2018

Source: EssilorLuxottica (2019), *Universal Registration Document 2018*

In 2018, EssilorLuxottica reported a pro forma revenues of €16,160 million, experiencing a solid growth of 3.2% at constant exchange rates. This positive performance was driven by contributions from both Essilor and Luxottica, as their strategic initiatives and growth projects yielded fruitful results across all regions.

The pro forma gross margin, when adjusted, experienced a slight decline to 62.9%. However, the pro forma operating profit, also on an adjusted basis, reached €2,572 million, making a commendable increase of 1.2% at constant exchange rates. However, the pro forma net profit, when adjusted, faced a decrease of 1.7%, amounting to €1,871 million. Despite this, the adjusted net margin remained steady at 11.6%.

Figure 3.6: EssilorLuxottica's Consolidated P&L (at current exchange rates)¹⁶

€ millions	31/12/2017			31/12/2018		
	Essilor adjusted	Luxottica adjusted	EssilorLuxottica a Pro forma adjusted	Essilor adjusted	Luxottica adjusted	EssilorLuxottica a Pro forma adjusted
Revenues	7,402	9,184	16,586	7,460	8,929	16,389
Cost of sales	(3,096)	(3,164)	(6,260)	(3,088)	(3,125)	(6,213)
Gross profit	4,306	6,020	10,326	4,372	5,804	10,176
Total operating expenses	(3,031)	(4,580)	(7,611)	(3,139)	(4,461)	(7,600)
Operating profit	1,275	1,440	2,715	1,233	1,343	2,576
Financial result	(60)	(61)	(121)	(56)	(50)	(106)
Share of profit of associates		1	1		1	1
Profit before taxes	1,215	1,380	2,595	1,177	1,294	2,471
Income taxes	(273)	(407)	(680)	(254)	(343)	(597)
Net profit	942	973	1,915	923	951	1,874

Source: EssilorLuxottica (2019), *Universal Registration Document 2018*

¹⁶ The data for EssilorLuxottica reported in the figure are presented excluding any elimination of intercompany transactions.

Figure 3.6 represents EssilorLuxottica's *pro forma* consolidated profit and loss (P&L) statement on a twelve months basis as of December 31, 2018 and its comparison with the year 2017, computed as the sum of Essilor's and Luxottica's P&Ls considered separately, since the merger between the two companies had occurred only a few months earlier, on October 1, 2018. It is relevant to note that the values are presented without excluding intercompany transactions so as to ensure that all years from 2014 to 2018 are comparable.

In 2018, *Essilor* achieved a noteworthy milestone with a revenue of €7,460 million, showing an impressive 5.1% growth at constant exchange rates. This positive performance was further bolstered by an enhancement in gross margin, which increased by 40 basis points, rising from 58.2% to 58.6% of revenue, amounting to €4,372 million. This improvement was attributed to a favourable product mix and increased efficiency gains.

The driving force behind the improved product mix was the rise in volume growth for renowned branded lenses, including Transitions, Varilux, Crizal, and Eyezen lenses. Furthermore, the introduction of new products like the Crizal Sapphire 360 lens, as well as the successful rollout of the Varilux X Series lens, contributed significantly to these gains.

On a *pro forma* basis, the adjusted operating profit for 2018 stood at €1,233 million, accounting for 16.5% of revenue, slightly lower than the 17.2% recorded in 2017. This decline was a result of increased investments in selling, advertising, and marketing initiatives. The selling expenses primarily aimed at enhancing service levels, while advertising and marketing expenditures supported various important endeavours.

These initiatives encompassed several aspects. Firstly, investments were directed towards acquiring new customers and scaling up the company's e-commerce businesses. Additionally, resources were allocated to foster the growth of Transitions products and the prescription lens business in the US. Lastly, the company intensified its investments in new wearer segments, focusing on programs for myopia management and initiatives aligned with the company's mission, such as the "2.5 New Vision Generation" program.

An encouraging development was the reduction in the effective tax rate by 90 basis points, bringing it down to 21.6%. This positive change was attributed to the cessation of the tax on dividends in 2018 and a favourable country mix.

However, the company's adjusted net profit experienced a slight decline of 1.9%, from €942 million in 2017 to €923 million in 2018. Despite this, the free cash flow generation for the year was a substantial €906 million, slightly below the 2017 level. If we exclude the foreign exchange impact, the free cash flow would have witnessed a modest increase of +2%.

On its side, in 2018, *Luxottica* achieved revenues of €8,929 million, marking a 1.5% increase at constant exchange rates despite a challenging -2.8% impact from current exchange rates. Notably, the second half of the year witnessed accelerated net sales, largely driven by progressive improvements in

Europe's wholesale business. The positive results were attributed to favourable price mix and disciplined cost management. Interestingly, these achievements were attained even though the company underwent a strategic shift in distribution, which led to a lower volume contribution in key regions.

Both divisions of Luxottica contributed to the overall sales performance for the year; the wholesale segment demonstrated robust acceleration in the latter part of the year, while retail maintained solid growth.

Regarding operating profit, on an adjusted basis, the company experienced a 6.8% decline to €1,343 million in 2018, with a 1.2% increase at constant exchange rates. The adjusted operating margin stood at 15.1%, reflecting a 60 basis points decrease, remaining flat at constant exchange rates. Within the divisions, the wholesale segment's adjusted operating margin was 22.6%, down by 60 basis points, with a 40% increase (at constant exchange rates). The retail division's adjusted operating margin declined by 20%, reaching 14.6%.

The net profit for fiscal year 2018, on an adjusted basis, declined by 2.0% to €951 million, but experienced a 6.7% increase to over €1 billion. This decline was partly due to the challenging comparison with the previous year's record level. In 2017, net profit results were positively impacted by non-recurring income related to Luxottica's Italian Patent Box agreement for 2015 and 2016, as well as the impact of US tax reform. Excluding the €159 million impact of these non-recurring items on 2017 results, the 2018 net margin would have been 90 basis points higher, benefiting from effective business and financial management. It is worth noting that for the second consecutive year, net margin exceeded the 10% threshold in 2018.

During the twelve-month period ending on December 31, 2018, Luxottica generated €923 million in free cash flow. Adjusting for exchange rate headwinds, the figure would have been around €1.1 billion. As of December 31, 2018, the company's net debt was €428 million, signifying a significant 42% decrease compared to the same period in the previous year. The net debt/adjusted EBITDA ratio decreased to 0.2x, indicating a favourable financial position.

3.3 Presentation of the Seller – GrandVision

As per the state before the announcement of the purchase transaction by EssilorLuxottica, GrandVision stood as a global optical retailing leader, boasting an impressive network of 7,095 stores spread across 43 countries throughout Europe, the Americas, and Asia. With 30 prominent retail banners, the company offered unparalleled eye care services as a comprehensive platform, catering to its customers' needs both online and in-store. GrandVision's product portfolio counted of an extensive selection of expert vision services, including prescription glasses, contact lenses, care products, and prescription and non-prescription sunglasses.

GrandVision provides customers with professional eye care solutions and its retail outlets function

under renowned local brand names, a few boasting legacies of over a century, frequently positioned as premier optical retailers within their nations.

The strength of its adaptable business model lies in its ability to thrive in diverse regulatory environments and varied market structures. This adaptability has led to a remarkable expansion of Company's geographic reach, with fast-growing markets in the Americas & Asia segment significantly contributing to its overall revenue.

Figure 3.7: GrandVision's Brand Portfolio as at December 31, 2018



Source: GrandVision (2019), *Annual Report 2018*

Throughout 2018, GrandVision further bolstered its store network, adding a total of 94 new stores. This expansion primarily resulted from the continued organic growth of its store base. As a result, the company's store count reached 7,095 by the end of 2018. Among these, an impressive 5,897 stores, accounting for 83% of the total, were owned by GrandVision, while the remaining 1,198 operated as franchise stores.

During the year, the *G4*¹⁷ and *Other Europe*¹⁸ segments played a significant role in the global store network growth, together contributing a total net opening of 75 stores.

However, the store count in the *Americas & Asia*¹⁹ segment experienced some fluctuations. This was due to the termination of an agreement with a department store chain in Chile and selective store closures in Brazil, Colombia, and Peru. These closures were aimed at enhancing profitability in those markets.

¹⁷ "*G4*" segment: Austria, Belgium, France, Germany, Ireland, Luxembourg, Middle East franchises managed by the UK division, Monaco, Netherlands, and UK (Source: GrandVision Annual Report 2018).

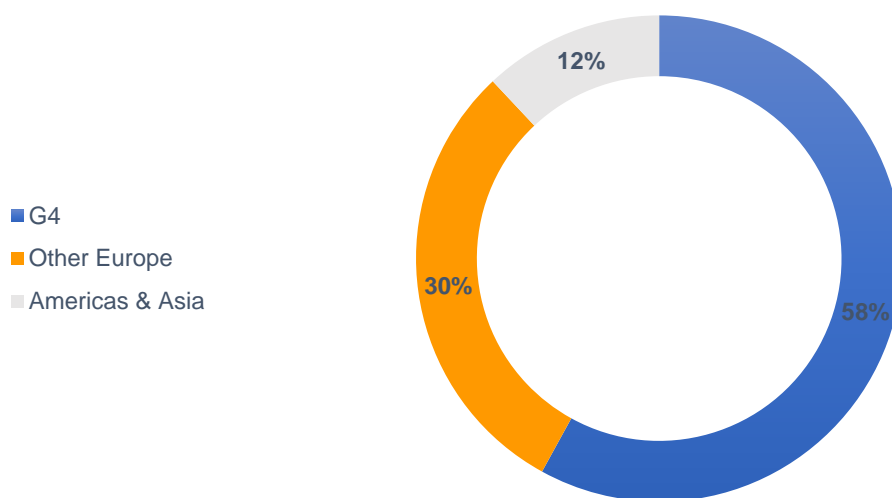
¹⁸ "*Other Europe*" segment: Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Italy, Malta, Norway, Poland, Portugal, Slovakia, Spain, Sweden, and Switzerland (Source: GrandVision Annual Report 2018).

¹⁹ "*Americas & Asia*" segment: Argentina, Brazil, Chile, Colombia, India (joint ventures), Mexico, Peru, Russia, Turkey, US, and Uruguay.

Nevertheless, the impact of these closures was offset by the ongoing store openings in Mexico, Turkey, and the United States, demonstrating GrandVision's continuous commitment to global expansion and growth.

Figure 3.8 on the following page shows the breakdown of GrandVision sales by geographic area. It can be noticed that, as of the end of 2018, 58% of the company's revenues originated from the "G4" geographic segment, which accounted for 3,387 stores. This is followed by the "Other Europe" segment, which accounts for 30% of total GrandVision's sales, and "Americas & Asia" with 12%. Thus, it can be appreciated that the majority of the company's revenues come from Europe with approximately 90 percent of sales hailing from that region.

Figure 3.8: GrandVision's Percentage of Revenues by Geographic Area as at December 31, 2018



Source: GrandVision (2019), *Annual Report 2018*

Prominent retail banners in *G4* segment included Apollo Optik in Germany, boasting an impressive network of 856 store. Additionally, Pearle operated across Austria, Belgium, and the Netherlands, with a total of 682 stores. Générale d'Optique held a significant presence in France, operating 624 stores. Furthermore, Vision Express operated in the UK, Ireland, and the Middle East, maintaining a strong network of 620 stores. Comparable growth for the segment was 2.4%, driven by the strong performance in both Germany and France.

On the other hand, *Other Europe* segment featured 1,912 store in 2018, which yielded revenues of €1,130 million, also as a result of acquisitions, primarily Visilab in Switzerland, at the end of 2017. GrandVision banners boasted market-leading positions in several Northern, Southern and Eastern Europe markets, reinforcing their prominence in the optical retail industry. Notably, the Czech Republic, Estonia, Finland, Hungary, Italy, Poland, and Portugal have witnessed GrandVision's strong foothold. Among these key markets, at the end of 2018, GrandVision operated 287 stores across Italy, while Multiópticas held a

significant presence in Portugal with 216 stores. Vision Express, with 260 stores, serves as a prominent retail banner in Poland, Hungary, and Bulgaria. Additionally, Synoptik stood as a leading optical retailer in Sweden and Denmark, operating an impressive network of 242 stores.

On a last note, GrandVision was also already operating in the booming markets of the *Americas and Asia*, which generated revenues of €459 million in that year from 1,796 stores. In particular, GrandVision's presence in Latin America was notable, with leading optical retail banners operating successfully in Argentina, Chile, Colombia, Mexico, and Uruguay. The optical retail markets in Latin America have demonstrated impressive growth rates, outpacing their more developed counterparts. Meanwhile, in Asia, GrandVision maintained a strong presence and strategic positioning in key markets such as China, India, Russia, and Turkey.

With respect to the company's financial situation, at the date of the deal announcement, GrandVision had a healthy asset and financial position, which drew the attentions of EssilorLuxottica to integrate it into its already extensive network. In 2018, GrandVision achieved its most remarkable top-line growth since 2015, with revenue soaring at constant exchange rates by an impressive 10.3%, reaching €3,721 million. This growth was primarily driven by a 3.4% increase due to new store openings and a significant 6.4% contribution from M&A activities.

Adjusted EBITDA also showed commendable progress, rising by 6.2% at constant exchange rates to €576 million. However, the net result witnessed a slight decline of 4.7%, reaching €237 million.

The system wide sales, which encompassed both GrandVision's own stores and those of its franchises, reached €4,079 million, marking a notable 7.8% increase. This demonstrated the overall success and positive momentum of GrandVision's retail sales operations. Notably, GrandVision's efforts to boost e-commerce sales have been fruitful, with a remarkable surge of over 60% in 2018. Pure online sales in the contact lens segment have also witnessed significant growth, accounting for nearly 10% of total segment sales in 2018.

The demand for eye care remained robust, driven by long-term demographic trends and consumer's increasing focus on value and quality. These market trends, combined with GrandVision's commercial strategy, have contributed to the expansion of the Company global market share in the years prior to the GrandVision's acquisition announcement. Consequently, the Dutch company have solidified its position as a leading global optical retailer.

As anticipated in this Section, GrandVision has also been deeply involved in relevant M&A deals. By the end of 2017, the Company made significant strides in expanding its presence through two notable acquisitions of optical retail chains in Europe. The first involved securing a majority stake in Visilab, a prominent optical retail chain in Switzerland; the second was the successful acquisition of Tesco Opticians in the United Kingdom.

In 2018, GrandVision successfully opened approximately 400 new stores, resulting in a net addition of 94 stores, elevating the total store count to an impressive 7,095 by the end of the year. This expansion

further solidified GrandVision's position as the world's largest retailer of prescription glasses.

System-wide sales, which encompass both the retail sales of GrandVision's own stores and those of its franchisees, recorded a substantial increase of 7.8%, reaching €4,079 million (compared to €3,784 million in the previous year, FY17). This impressive growth serves as a testament to GrandVision's continued dedication to excellence and market leadership.

Figure 3.9 summarizes GrandVision's P&L stream from 2014 to 2018.

Figure 3.9: GrandVision's Income Statement Full Year 2014-2018

Restated IS (Currency: € mln)	31-12-2014	31-12-2015	31-12-2016	31-12-2017	31-12-2018
Revenue	2,817	3,205	3,316	3,450	3,721
Cost of sales	744	876	901	924	1,004
Gross Profit	2,073	2,328	2,415	2,526	2,717
SG&A	1,659	1,828	1,992	1,974	2,153
EBITDA	414	501	423	552	564
Depreciation	97	107	0	117	123
Amortization	31	40	46	51	66
Operating profit	286	354	377	384	374
Net interest expense	8	8	1	2	4
Other financial income and expenses	(24)	(12)	(28)	(32)	(52)
Profit before taxes	254	334	348	350	319
Income taxes	96	98	111	121	123
Deferred taxes	(16)	5	(16)	(20)	(41)
Net Profit	175	231	252	249	237

Source: GrandVision (2015-2019), *Annual Reports 2014-2018*

As can be seen from the table above, GrandVision experienced the most substantial revenue growth during 2015. In that year, the Company's sales increased by 14% compared to FY14. However, in the following years (2016-2017), revenue growth was slower at about 4 percent, rising again to about 8% in 2018.

Moreover, in 2018, the adjusted EBITDA exhibited a remarkable 6.2% increase at constant exchange rates, reaching €576 million (as compared to €552 million in FY17). This growth was underpinned by a noteworthy 3.7% organic growth, along with a favourable contribution of 2.5% from acquisitions. The positive influence of the Swiss Visilab business in the Other Europe segment partially offset the negative impact of the Tesco Opticians business in the G4 segment.

Despite the overall growth, the Adjusted EBITDA margin experienced a decline of 50 basis points, settling at 15.5%. This reduction was primarily attributed to the dilutive effects of acquisitions, as well as additional costs linked to the integration of the Tesco Opticians business. Furthermore, transitional investments in overheads in the Benelux region also contributed to the margin decrease.

3.4 Transaction Rationale and Synergies

The planned combination of EssilorLuxottica and GrandVision was poised to act as a catalyst, unlocking the latent growth potential of the eyewear and eyecare industry, exploiting the complementary nature of the two companies' activities. While maintaining EssilorLuxottica's open business model, the transaction also integrates GrandVision's 125 years of experience, marked by a customer-centric approach.

Moreover, this partnership granted EssilorLuxottica an opportunity to strengthen its direct-to-consumer business, leveraging GrandVision's technologies, expertise, and talented workforce, which have been instrumental in its success.

By expanding its retail operations while sustaining a robust wholesale distribution network, EssilorLuxottica enhances also its capacity to foster consumer engagement, elevating the in-store experience, leading to more frequent eye exams, up-to-date prescriptions, and a wider range of tailored vision care products to cater to diverse vision and style needs.

Simultaneously, GrandVision gains access to EssilorLuxottica's exceptional product innovation, manufacturing, and commercialization capabilities, integrated IT system, rich brand portfolio, state-of-the-art supply chain, talent development programs, and digital tools. These resources facilitate a closer and increasingly omnichannel relationship with GrandVision's vast consumer base of over 150 million individuals worldwide.

By leveraging its vertically integrated business model and implementing effective cost control measures, especially in sales and general administrative domains, the company translates revenue growth into significant margin expansion. It can also invest in digitalization, bolstering brand awareness and supporting new commercial initiatives.

Moreover, the acquisition of GrandVision, can be also considered as a major step in the Essilux's strategy and its positioning in the global eyecare and eyewear sector. Thereby, EssilorLuxottica can improve its retail footprint, increasing by over 7,200 stores its retailing network, reaching a combined number of stores close to 18,000, further consolidating its presence in the European market.

Overall, the strategic alliance between EssilorLuxottica and GrandVision is expected to yield synergistic benefits, both in terms of revenue-enhancing and cost-reducing, enhancing consumer experiences, product offerings, and market presence in the dynamic world of eyewear and eyecare.

Reflecting these rationales for pursuing the deal, the following synergies can be reported, as distinguished into revenue-enhancing synergies and cost-reducing synergies.

1) *Vertical integration – EssilorLuxottica (Revenue-enhancing)*

Through the acquisition of GrandVision, EssilorLuxottica has the ability to directly offer its products in a network of retail stores present in more than 40 countries and 7,330 points of sale, and uniquely identify consumer tastes and trends. This means that data can flow freely and transparently along all levels of the supply chain, ensuring that all decisions, both strategic and tactical, are data-driven. This represents an

additional strength point in view of fashion houses that decide to entrust the group with the manufacturing and global distribution of their eyewear collections. The ability to distribute their frames and lenses directly to all of the GrandVision's stores, and to make use of the retailer chain's 125 years of experience in customer management, allows them to give their products greater visibility within the stores. This will accelerate the spread of EssilorLuxottica's brands, products and technology.

In addition, the newly formed group will be able to implement cross-marketing and cross-selling strategies between the platforms of EssilorLuxottica and GrandVision, which will enable it to increase global sales. Finally, the even stronger combination of manufacturing and distribution would enable the Group to carefully control processes, improve the efficiency of the entire value chain, and respond with agility to market changes and new opportunities by eliminating problems related to transactions with suppliers.

2) Vertical integration – GrandVision (Revenue-enhancing)

GrandVision could benefit from the acquisition by EssilorLuxottica since it could have easy access to the many brands in EssilorLuxottica's brand portfolio. In this way, the leading retailer in the eyewear market could increase annual visits to its stores in more than 40 nations around the world. In addition, the company could benefit from initiating commercial programs for the combined distribution of Essilux - GrandVision group products. For instance, before the acquisition, there were several categories of lenses in GrandVision' portfolio that were not yet sufficiently popular (progressive lenses, blue cut, progressive, etc.). Together with EssilorLuxottica's brands, products and technology, it becomes possible to significantly enhance and elevate the market for such products.

Sunglasses are another untapped opportunity for GrandVision as of the acquisition date. And again, with EssilorLuxottica's portfolio of brands, technology, and know-how in sunglasses, it becomes possible to increase and develop that market as well.

Finally, through the transaction, it is also possible to improve the customer journey of GrandVision's store customers. Indeed, it would be possible to combine the omnichannel capabilities of EssilorLuxottica and GrandVision to further develop the market and increase visits to the Company's stores.

3) Increase market power in Europe – EssilorLuxottica (Revenue-enhancing)

The acquisition of GrandVision's retail stores, which generates 88 percent of its sales in Europe, will enable EssilorLuxottica's brands, which are most prevalent in North America, to significantly increase their sales and market position in European countries.

The Group will thus be able to significantly increase its sales footprint and reach in Europe. It will also be able to consolidate its position in the eyecare and eyewear industry on a global scale, thereby increasing annual sales, and increase its visibility in the market by becoming an important presence for all its stakeholders, particularly regulators.

4) *Access to critical resources and know-how – GrandVision (Revenue-enhancing)*

GrandVision would benefit from EssilorLuxottica's exceptional product innovation, integrated IT system, brand portfolio, cutting-edge supply chain, and digital tools and expertise to foster an increasingly close, omnichannel relationship with the more than 150 million consumers worldwide.

One objective that could be achieved through such a transaction, and which contributes to investment protection, is to preserve in-house know-how from outside companies; deep knowledge about products and tools is thus preserved in the company itself, avoiding being spread among competing companies. These actors, together identify the production capacity needed, the investments in specialized facilities and the improvements they need to increase product quality and have lower production costs.

Therefore, this could improve the level of service to the end consumer and have a positive effect on store penetration and customer engagement, improving the standard of the in-store experience, resulting in more regular eye examinations, updated prescriptions, and increased availability of multiple eye care products tailored to meet all visual and style needs.

5) *Supply chain optimisation (Cost-reducing)*

The integration of the supply chains and information systems (e.g., the implementation of a unified ERP platform in different regions) of the two groups could have the effect of streamlining the entire production and distribution chain of lenses and eyewear by lowering the costs associated with the purchase of materials through the establishment of a single integrated platform. In this sense, the distribution of the Essilux-GrandVision group could be optimized through the creation of dedicated programs for the delivery of the company's products in an integrated manner by geographic area as well as for the delivery of online sales.

The deal could then initiate the design of integrated logistics for the complete pair, with the aim of creating a solid common process in all geographic areas to serve major customers, optimizing all the Group's procurement activities and lowering Essilux – GrandVision's production costs.

At the same time, the leading manufacturing and retailing group could embark on a program to renegotiate contracts with existing suppliers, which would enable it to further reduce production and retailing costs.

6) *G&A rationalization (Cost-reducing)*

The Group created by integrating the activities of GrandVision and EssilorLuxottica could enjoy benefits in terms of reduced general and administrative expenses at the aggregate level. The two companies would commit to training their retailers in the use and understanding of these tools, so that they can illustrate to potential buyers how to use them.

In contrast, in case the company used outside retailers, it would face the expense of training and coordinating personnel to proceed with the transfer of information to the customer; this would result not

only in indirect communication between the company and the end consumer, but would increase the cost and time.

3.5 Evaluation of the GrandVision's Stand-Alone Value

In this part of the Chapter, the case study on the evaluation of the GrandVision acquisition carried out by EssilorLuxottica is discussed. In particular, in this Section, it will proceed with assessing the Stand-alone Value of GrandVision (target company). Then, in the following *Section 3.6*, an approach will be proposed for the evaluation of synergies arising from the transaction, based on the application of Real Options.

In the assessment of this specific case study, the value of change in control has not been accounted for, since no substantial shift in management's strategic goals and operation is expected. Such expectations are also read in a July 31, 2019 GrandVision press release that states "*EssilorLuxottica has expressed strong respect and appreciation for the current management team and Mr. Stephan Borchert and Mr. Willem Eelman are committed to remain as CEO and CFO of GrandVision post-closing of the Transaction and the subsequent Mandatory Offer*"²⁰.

Particularly, in this Section, the stand-alone value of GrandVision will be assessed using the two traditional methods of business valuation. First, an evaluation of the company's value obtained by applying the DCF method (*Section 3.5.1*) will be provided. Subsequently, the valuation of GrandVision will also be presented using the Guideline Public Company Method (*Section 3.5.2*).

3.5.1 DCF Method

The first method through which the stand-alone value of the company being purchased by the EssilorLuxottica group (GrandVision) will be assessed is the DCF (Discounted Cash Flow) Method, whose theoretical aspects have already been anticipated in *Section 2.2*.

To reach the firm value through this widely adopted method, as a first step, the company's balance sheets and income statements for the 5 years prior to the deal announcement, thus from 2014 to 2018, have been obtained from the Refinitiv Workspace database. These were later restated in order to shed light on the key performance figures and enable a more in-depth appraisal of the company.

The main financial statement items are outlined below in *Figure 3.10*, which summarises the main items in the balance sheets from 2014 to 2018, and *Figure 3.11*, which instead presents the main items recorded, for the years 2014-2018, in the income statements of the company.

²⁰ *GrandVision supports EssilorLuxottica in acquiring HAL's 76.72% interest in GrandVision*, GrandVision Press Release (July 31, 2021).

Figure 3.10: GrandVision's Restated Balance Sheet Full Year 2014-2018

Restated BS - Assets (Currency: € mln)	31-12-2014	31-12-2015	31-12-2016	31-12-2017	31-12-2018	Restated BS - Liabilities (Currency: € mln)	31-12-2014	31-12-2015	31-12-2016	31-12-2017	31-12-2018
Current Assets						Current Liabilities					
Cash and cash equivalents	134.10	198.31	181.10	164.68	138.26	Accounts payable	132.67	134.03	588.42	198.65	181.23
Accounts receivable	213.04	207.14	291.49	250.65	223.62	Deferred revenue	58.59	67.85	-	75.86	77.67
Provision - accounts	-	-	-	-	(0.44)	Accrued expense	186.33	265.05	-	274.74	268.84
Income tax receivable	7.72	28.06	6.15	40.55	39.70	Income tax payable	19.54	32.54	41.83	47.59	40.39
Inventories	239.66	264.01	292.98	349.74	330.50	Current provisions	7.20	23.76	26.04	12.02	11.93
Prepaid expense	44.26	37.34	-	43.48	-	Current portion of long-term	92.91	361.74	543.19	612.95	515.27
Other current assets	0.89	1.20	5.22	1.43	53.26	Other current liabilities	148.65	71.15	0.87	99.22	101.96
Total current assets	639.67	736.06	776.94	850.53	784.90	Total current liabilities	645.89	956.12	1,200.35	1,321.03	1,197.29
Long-Term Assets						Long-Term Liabilities					
Net PP&E	407.73	431.31	443.82	488.58	516.77	Long-term debt	960.46	775.74	388.25	377.20	362.95
Net intangible assets	448.24	454.42	445.65	588.87	563.27	Deferred revenue	-	-	-	-	7.78
Goodwill	885.85	1,025.22	1,012.06	1,065.47	1,052.28	Deferred tax liability	141.38	142.57	73.85	80.95	71.55
Deferred tax asset	80.91	67.19	14.42	17.34	46.71	Post employment benefits	105.83	67.45	75.69	103.80	100.22
Investments	34.97	40.44	36.35	1.20	1.09	Long-term provisions	7.74	8.53	12.33	18.19	12.98
Other long-term assets	50.53	44.68	45.28	44.30	49.11	Other long-term liabilities	18.37	17.12	17.48	34.56	8.90
Total long-term assets	1,908.23	2,063.26	1,997.58	2,205.76	2,229.23	Total long-term liabilities	1,233.78	1,011.41	567.60	614.70	564.38
Total Assets	2,547.90	2,799.32	2,774.52	3,056.29	3,014.13	Equity					
						Share capital	61.54	51.82	(34.48)	59.52	60.47
						Retained earnings	616.13	786.43	981.38	1,128.52	1,259.03
						Comprehensive income	(54.77)	(59.72)	-	(148.96)	(157.05)
						Minorities (equity)	45.33	53.26	59.67	81.48	90.01
						Total equity	668.23	831.79	1,006.57	1,120.56	1,252.46
						Total Liabilities and Equity	2,547.90	2,799.32	2,774.52	3,056.29	3,014.13

Source: GrandVision (2015-2019), *Annual Reports 2014-2018*

Figure 3.11: GrandVision's Restated Income Statement Full Year 2014-2018

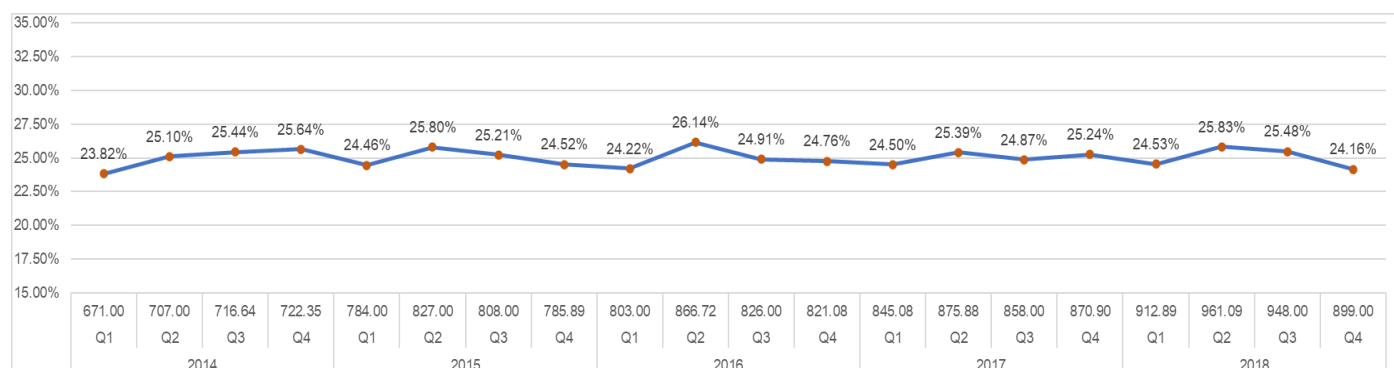
Restated IS (Currency: € mln)	31-12-2014	31-12-2015	31-12-2016	31-12-2017	31-12-2018
Revenue	2,817	3,205	3,316	3,450	3,721
Cost of sales	744	876	901	924	1,004
Gross Profit	2,073	2,328	2,415	2,526	2,717
SG&A	1,659	1,828	1,992	1,974	2,153
EBITDA	414	501	423	552	564
Depreciation	97	107	0	117	123
Amortization	31	40	46	51	66
Operating profit	286	354	377	384	374
Net interest expense	8	8	1	2	4
Other financial income and expenses	(24)	(12)	(28)	(32)	(52)
Profit before taxes	254	334	348	350	319
Income taxes	96	98	111	121	123
Deferred taxes	(16)	5	(16)	(20)	(41)
Net Profit	175	231	252	249	237

Source: GrandVision (2015-2019), *Annual Reports 2014-2018*

Once the restated financial statements have been determined, their revenue streams have been examined in order to ascertain their trends and possible evolving paths. This allowed for a more thorough assessment of sales starting in 2019 (the first forecasted year of the appraisal).

Figure 3.10 illustrates the respective weight (in %) of each quarter on total revenues for each year. As can be noticed, the distribution is all-too-flat, with all quarters constituting roughly equal contributions to the total revenues of the corresponding fiscal year.

Figure 3.12: GrandVision's Revenues Quarter Over Quarter 2014-2018



Source: *Own creation*, data from Refinitiv Workspace

For each quarter, an average of the 5-year percentage weights prior to the deal announcement was calculated so as to determine the potential weight of each quarter at the end of 2019F. Moreover, as stated earlier, since the proposed acquisition was announced in July, 2019, awareness of the company's corporate reports, and thus financial data, up to Q2 2019 was available.

Therefore, by simply dividing the Q1 and Q2 2019 revenues by the potential weights previously computed, and average them out, it is possible to obtain an indication about GrandVision's potential fiscal year 2019 revenues. Such a proceeding has a logical rationale since, as mentioned above, the trend for each quarter remained approximately the same in the previous years.

Figure 3.13: GrandVision's 2019 Forecasted QoQ Revenues

	H1 2019		Forecasted	
	Q1	Q2	Q3	Q4
Revenue 2019 (normal scenario)	974.00	1,021.21	1,005.81	993.20
Quarter Share (avg. '14 to '18)	24.31%	25.65%	25.18%	24.87%

Source: *Own creation*

As the Q1 revenues are €974 million and Q2 revenues are €1,021 million, and the corresponding weights are 24.31% and 25.65%, the forecasted full-year 2019 revenues are equal to €3,994 million²¹.

In addition to these estimates, it is worth considering the potential impacts of two events that were already known at the time the transaction was announced:

- USA vs China trade conflicts, for which a negative impact on Q3 and Q4 2019 sales of 15% was assumed;

²¹ Source: Results – 2019 Half Year and Second Quarter (July 31, 2019), *GrandVision Investor Relations*.

- UK's departure from the European Union (Brexit), for which a 5% sales reduction was assumed for the last two quarters of 2019. This is a conservative assumption compared to estimates conducted by Harvard Business Review (March 13, 2019), which assumed a 3% reduction in average UK companies sales.

GrandVision's concerns about this last event were outlined in a company press release dated 27 February 2019, which literally states *"In the UK, the weaker economic environment, driven by uncertainties surrounding Brexit, has put additional pressure on customers which we have largely been able to mitigate through growing e-commerce sales. Overall, we saw moderate growth as digital sales compensated for lower retail sales"*.

Assuming that sales in UK and China respectively represent 12% and 1% of GrandVision's total sales, as assumed by a CreditSuisse Report (March 17, 2017), expected total revenues for 2019 would amount to €3,979.23 million.

The results of the full-year 2019 revenue forecast are condensed in the figure below.

Figure 3.14: GrandVision's 2019 Forecasted Full-Year Revenues

	H1 2019		Forecasted		Annual
	Q1	Q2	Q3	Q4	
Revenue 2019 (normal scenario) Quarter Share (avg. '14 to '18)	974.00 24.31%	1,021.21 25.65%	1,005.81 25.18%	993.20 24.87%	
USA vs China international trade conflicts Impact Sales Reduction			1.51 15.00%	1.49 15.00%	
UK's departure from the European Union (Brexit) Impact Sales Reduction			6.03 5.00%	5.96 5.00%	
Revenue 2019F (current scenario)	974.00	1,021.21	998.27	985.75	3,979.23

Source: Own creation

In view of the assessments made so far, the 2019 revenue growth rate on an annual basis would be equal to 7.34%, without considering the impacts of the two aforementioned events; on the other hand, this rate would be reduced to 6.94% if the impacts of the US-China trade war and Brexit were considered.

Once the revenue growth rate for 2019 had been estimated, the other components for evaluating the target through the DCF method have to be determined. Hereunder, it is presented an individual analysis of each of these determinants.

Beta

GrandVision's beta has been computed on the basis of three market indexes:

- *FTSE All World*: an international equity index which serves as a global stock index encompassing both developed and emerging markets;
- *STOXX Europe 600*: also known as the STOXX 600, this index – designed by STOXX Limited – is composed of 600 leading European market capitalizations;

- *AEX*: a stock market indicator for prominent Dutch corporations traded on Euronext Amsterdam, which GrandVision was also part of before the delisting. This index encompasses a maximum of 25 major stock, subject to an annual revision every 1st March.

For these indexes, as well as for the GrandVision stock (GVNV.AS), weekly prices from June 3, 2016 to June 28, 2019 were extracted from Refinitiv Workspace, and their returns calculated. *Appendix A* presents data on the weekly prices and returns of the three indexes and the GVNV.AS title.

Upon the basis of these data, it is therefore possible to determine the *R squared* of the GrandVision stock with respect to the three indexes, as well as the *raw beta*. From the raw beta, it is then possible to determine the *adjusted beta* by means of the formula:

$$(3.1) \quad \frac{2}{3} * \text{Raw beta} + \frac{1}{3} * \text{Market beta}$$

Since the *market beta* is always equal to 1, the resulting adjusted betas are presented in *Figure 3.15* below.

Figure 3.15: GrandVision's Beta

	FTSE All World (EUR)	STOXX Europe 600	AEX	
R squared	0.14	0.18	0.13	
Raw beta	0.71	0.81	0.66	
Adjusted beta	0.81	0.87	0.77	0.87

Source: *Own creation*

As can be appreciated, the betas do not differ significantly from each other. However, for the purpose of assessing GrandVision's stand-alone value, the company's adjusted beta in relation to the "STOXX Europe 600" index will be used, since it is the one with the closest value to 1 (Market beta). This choice is also supported by considering that the resulting beta is close to the beta estimated by Professor Damodaran (January 5, 2019) for the industry "Retail (Special lines)", equal to 0.96.

In addition, the choice of STOXX Europe 600 as market index upon which the beta computation is based, is consistent to GrandVision's geographic scope. Specifically, as of the date the transaction was announced, the company accounted for approximately 90 percent of total sales in Europe, so it seems appropriate to select a market index that is representative of the European market and its trends.

WACC

The following step involves determining GrandVision's WACC, which will be needed to discount the company's prospective cash flows. For this purpose, it is necessary to ascertain the factors comprising the *Formula 2.7*, which for convenience is reported on the next page:

$$(3.2) \quad WACC = \frac{E}{E + D} * r_e + \frac{D}{E + D} * r_d * (1 - t)$$

Therefore, the first stage is to assess the *return on equity*, which is computed via the following formula, also referred to CAPM (Capital Asset Pricing Model), stating that the expected return on an asset or stock is a linear function of the risk-free return (r_f) and systematic risk of the asset or stock (β), multiplied by the ERP (Equity Risk Premium), given by the difference between the market rate return and the risk-free rate of return.

$$(3.3) \quad r_e = r_f + \beta (r_m - r_f)$$

By turning to analyse each component of the CAPM formula and starting with the risk-free rate of return (r_f), it can be said that this rate was assumed to be the average of the 10-Year German Government bond returns for the full year 2018 (first auction: January 10, 2018; last auction: November 28, 2018). The reason for the preference for German Government bonds (*Deutsche bundesanleihen*) is motivated by the consideration that they are notoriously seen as securities that do not entail any risk of default, and because they match GrandVision's geographical footprint, with 88% of its sales in Europe. Thus, it seems appropriate to select as r_f the risk-free return par excellence in the European market, i.e. the German *bund*. The related data were collected from the Financial Agency of the Federal Republic of Germany's website, whose relevant details regarding historical bond issuance can be found in *Appendix B*.

The average of the 10-Y German bond returns turns out to be equal to 0.51%, which is considered as the risk-free return for GrandVision's stand-alone valuation.

Since GrandVision is a global company operating in more than 40 countries, it results necessary to weight the ERPs of each geographic area (G4, Other Europe, and Americas & Asia) with the respective share percentage that GrandVision's sales have for that specific area in the company's total revenues.

Details on the calculation of the individual geographic area weights on GrandVision's total revenues can be found in *Appendix C* of this thesis. Here, it is merely sufficient to report the averages of these weights for the years 2014-2018, which are presented below:

- *G4*: 60.07%;
- *Other Europe*: 27.94%;
- *Americas & Asia*: 11.99%.

Once the revenue weights of each geographical segment have been computed, the CRP (Country Risk Premium) for each of these areas have been calculated.

Details concerning the process of calculating CRPs for the G4, Other Europe, and Americas & Asia areas are provided in *Appendix D*, while below the CRP results for each geographical segment are highlighted:

- G4: 0.82%;
- Other Europe: 1.99%;
- Americas & Asia: 3.25%.

The country risk premium data were extracted from the Damodaran website and were updated as of January 1, 2019. Given that the MRP (market risk premium) of a mature market, for which the US market is considered, is 5.96% according to Damodaran's estimates (January 1, 2019), the total ERPs for each geographic segment become as highlighted in *Figure 3.16*.

Figure 3.16: GrandVision's Total ERP for Geographic Segment

Areas	Revenue Weight	CRP	Total ERP
G4	60.07%	0.82%	6.78%
Other Europe	27.94%	1.99%	7.95%
Americas & Asia	11.99%	3.25%	9.21%
Market Risk Premium Mature Market (US) Jan '19			5.96%

Source: *Own creation*

By multiplying the ERPs of each geographic segment by their relative revenue weights, a total ERP for GrandVision equal to 7.39% was obtained, to which an additional 1% is added in order to reach a more conservative estimate. On the basis of these values, the return on equity (r_e) for GrandVision turns out to be 7.85%.

The other element of the formula for assessing WACC is the return on debt (r_d). For the calculation of the return on debt, the following formula is adopted in this thesis:

$$(3.4) r_d = r_f + Spread$$

Here, the risk-free rate of return considered is the same as that used for estimating the return on equity, while a procedure based on the Interest Coverage Ratio (ICR) and rating was used to assess the spread.

In particular, based on this process, the median value of GrandVision's ICR for years 2014-2018, equal to 102x, was used to estimate the company's rating according to the tables prepared by Professor Damodaran (January 1, 2019). For that given level of ICR, the associated rating is Aaa/AAA, which is matched by a Spread equal to 0.75%. Hence, by adding this spread up to the risk-free rate of return, a return on debt (r_d) of 1.26% is attained.

Once the return on equity and debt have been computed, it is turn to estimate the company's financial leverage (*D/E ratio*), which is required to esteem the weights of equity and debt on the total value of the company, $E/(D+E)$ and $D/(D+E)$ respectively.

For the target D/E ratio, the estimate from an already mentioned CreditSuisse report was used, which claimed that GrandVision's D/E ratio for 2019 would be equal to 24.2%. Therefore, the weight of equity and debt on the company's value become 80.52 percent for equity and 19.48 percent for debt.

The final component of *equation 3.2* for determining GrandVision’s WACC is the *effective tax rate*. This has been considered to be 25%, according to OECD Statistics, which states that the Dutch corporate tax rate was 19% of the taxable income up to and including €200,000, above which the rate was 25%.

After all components have been ascertained, whose values are summarized in *Figure 3.17*, the WACC can be determined, which for GrandVision is found to be 6.51%.

Figure 3.17: GrandVision’s WACC Components

WACC	6.51%
rE	7.85%
rD	1.26%
$E/(E+D)$	80.52%
$D/(E+D)$	19.48%
<i>Tax Rate</i>	25.00%

Source: *Own creation*

Long-Term Growth Rate

Furthering the assessment of GrandVision’s stand-alone value, another extremely relevant item to be estimated, especially for determining the terminal value, is the long-term growth rate. This is assumed by weighting the estimated next 5-years inflation rates, after the deal announcement (2019-2023), of each geographical segment (G4, Other Europe, and Americas & Asia) by their respective shares in total company revenues. The procedure of determining the weights of each geographical segment on GrandVision’s total sales – details of which can be found in *Appendix C* – has already been described throughout the discussion of the WACC estimation process.

With regard to historical figures on inflation rate estimates, these were drawn from the International Monetary Fund (2023) database, which provides, for each year, the estimates for inflation rates for the following 5 years. Particularly, for the purpose of this case study evaluation, predictions made in fall 2018 have been considered. Details of inflation rate forecasts for every geographical segment are presented in *Appendix E*.

It is worth noting that for the computation of the segment averages, some countries have not been taken into account, as they have been considered to be outliers. This relates to Hungary, Poland, Argentina, and Turkey, which exhibit deviating values compared to other countries within the same geographic segment and account for a moderate business turnover for GrandVision.

Having assumed the average inflation rate for the following five years after the deal announcement, as well as the weight of each segment’s revenue in total sales, it is possible to calculate the company’s long-term revenue growth rate.

Figure 3.18 provides a summary of the main components of the long-term growth rate, from which a rate of 2.14% is obtained.

Figure 3.18: GrandVision's Long-Term Growth Rate Components

Areas	Next 5 year (2019-2023) inflation rate	Revenue weight
G4	1.95%	60.07%
Other Europe	1.88%	27.94%
Americas & Asia	3.67%	11.99%

Source: *Own creation*

At this point of the analysis, all the fundamental building blocks for estimating the value of GrandVision through the DCF method have been established. It only remains to make some assumptions about the prospective values of certain balance sheet items based on historical figures.

Appendix F shows some historical ratios as derived from the company's financial statements between 2014 and 2018, along with their average, median, and minimum/maximum values. Whereas, below are summarised the main assumptions about ratios and items, split into three main scenarios (base, best, and worst), used to determine the stand-alone value of the company.

Figure 3.19: GrandVision's DCF Assumptions

	Base Scenario	Worst Scenario	Best Scenario
Revenue growth rate 2019	6.94%	6.54%	7.34%
EBIT Margin 2019	10.75%	9.14%	12.36%
Long Term EBIT Margin	10.00%	8.50%	11.50%
NWC/Sales	0.42%	0.48%	0.35%
Effective Tax Rate	28.87%	30.32%	27.43%
PP&E/Sales	13.87%	13.87%	13.87%
Intangible assets/Sales	15.22%	15.22%	15.22%
Depreciation/PP&E	25.74%	25.74%	25.74%
Amortization/Intangible assets	10.72%	10.72%	10.72%
Long Term Growth Rate	2.14%	1.93%	2.35%
WACC	6.51%	7.16%	5.85%

Source: *Own creation*

As a result, the forecasted cash flows of GrandVision, starting from 2019 and including the Terminal Value, appear to as reflected in *Figure 3.20*.

Figure 3.20: GrandVision's Forecasted FCFs and TV

	0	1	2	3	4	5	Terminal Year
DCF	2018A	2019F	2020F	2021F	2022F	2023F	2024F
Revenue	3,720.98	3,979.23	4,217.19	4,428.88	4,608.67	4,751.50	4,853.14
YoY Revenue Growth		6.94%	5.98%	5.02%	4.06%	3.10%	2.14%
EBIT		427.80	447.05	462.84	474.71	482.28	485.31
EBIT Margin		10.75%	10.60%	10.45%	10.30%	10.15%	10.00%
Taxes		123.52	129.07	133.63	137.06	139.25	140.12
NOPAT		304.28	317.97	329.20	337.65	343.04	345.19
Plus: D&A		193.38	206.98	219.35	230.36	239.72	247.15
Less: Change in NWC		3.22	0.99	0.88	0.75	0.59	-
Less: CAPEX		270.84	276.20	280.93	282.66	281.26	247.15
FCF		223.60	247.76	266.75	284.60	300.89	345.19
TV						7,906.23	
FCF+TV		223.60	247.76	266.75	284.60	8,207.12	

Source: *Own creation*

By discounting all of GrandVision's cash flows at the company's WACC and summing all discounted cash flows, it results in an Enterprise Value of €6,859.14 million.

Hence, having arrived at the last part of the DCF valuation process, in order to determine the GrandVision's stock price, it is necessary to calculate the value unlevered of the company (Equity Value), which is computed by purifying the net financial position from the Enterprise Value. Specifically, the process to get to the company's Equity Value is as follows:

Figure 3.21: GrandVision's DCF Assumptions

EV	6,859.14
<i>Plus: Cash</i>	<i>138.26</i>
<i>Plus: Investments in Associates</i>	<i>1.09</i>
<i>Less: Financial Debt</i>	<i>1,219.00</i>
<i>Less: Minorities (non-equity)</i>	<i>90.01</i>
<i>Less: Provisions</i>	<i>12.98</i>
<i>Less: Deferred Taxes</i>	<i>71.55</i>
EQ	5,604.95

Source: *Own creation*

Therefore, by dividing the Equity Value by the number of shares outstanding as of June 30, 2019, which amounted to 253.77 million, a stock price of Euro 22.09 is obtained. This price is slightly higher than GrandVision's stock price of Euro 20.44 updated as of June 28, 2019, prior to the disclosure of EssilorLuxottica's intention to purchase all GrandVision's shares.

Lastly, in *Appendix G* can be found the stock price sensitivity analysis as the building blocks of the evaluation model change, in addition to the scenario analysis of GrandVision's stock price under three scenarios described above.

3.5.2 Multiples Method

In order to establish a benchmark for GrandVision's value, the Multiples Method (or Guideline Public Company Method), already described in *Section 2.3.1*, has been employed due to its potential to act as a control method for determining the company's stock price.

For a first step, a number of companies somehow related to GrandVision were identified, both among those listed by Refinitiv and among the company's main competitors. From these companies, those that did not fulfil the requirements of same industry, sub-industry or competitive conditions have been excluded. The details of these companies are reported in *Figure 3.18* that is presented on page 89.

Figure 3.22: GrandVision Competitors

Name	RIC	Sector	Mcap (mIn, 2018)	
GrandVision NV	GVNV.AS	Miscellaneous Specialty Retailers	4,867.51	
Fielmann AG	FIEG.DE	Miscellaneous Specialty Retailers	4,536.00	
Next Plc	NXT.L	Apparel & Accessories Retailers	8,624.61	<i>Different product mix: clothing, beauty, footwear, and home products</i>
Card Factory Plc	CARDC.L	Miscellaneous Specialty Retailers	753.32	<i>Different product mix: greeting cards, dressings and gifts</i>
Bath & Body Works Inc	BBWIK	Miscellaneous Specialty Retailers	10,762.80	<i>Different product mix: fragrances</i>
New Look Vision Group Inc	-	Miscellaneous Specialty Retailers	295.26	
The Finish Line Inc.	-	Apparel & Accessories Retailers	339.19	<i>Different product mix: apparels, shoes and accessories</i>
Pets at Home Group Plc	PETSP.L	Miscellaneous Specialty Retailers	962.74	<i>Different product mix: pet care business</i>
Novartis AG	NOVN.S	Pharmaceuticals	189,919.71	<i>Different business model: pharmaceutical manufacturer</i>
Cooper Companies Inc	COO	Medical Equipment, Supplies & Distribu	11,223.01	<i>Different business model: eyewear manufacturer and women health</i>
National Vision Holdings Inc	EYE.O	Miscellaneous Specialty Retailers	1,955.42	
Jins Holdings Inc	3046.T	Miscellaneous Specialty Retailers	1,063.31	
EssilorLuxottica SA	ESLX.PA	Medical Equipment, Supplies & Distribu	47,137.54	<i>Different business model: eyewear manufacturer</i>
Safilo Group SpA	SFLG.MI	Apparel & Accessories	192.99	<i>Different business model: eyewear manufacturer, designer and retailer</i>

Source: *Own creation*

Out of these companies, only the following firms reflected all three of the aforementioned requirements:

- Fielmann AG,
- New Look Vision Group Inc,
- National Vision Holdings Inc, and
- Jins Holdings Inc.

These companies have been then compared to GrandVision with regard to profit margins, in particular gross profit margins and operating margins. The results of this analysis are condensed in *Figure 3.23*.

Figure 3.23: Margins Analysis

Gross Profit Margin	2014	2015	2016	2017	2018	Median	Average
Fielmann AG	75.51%	76.26%	76.03%	76.97%	76.67%	76.26%	76.29%
New Look Vision Group Inc	72.59%	72.43%	71.47%	71.40%	71.34%	71.47%	71.85%
National Vision Holdings Inc	N/A	46.55%	50.05%	49.18%	48.73%	48.96%	48.63%
Jins Holdings Inc	72.46%	74.51%	74.75%	75.21%	75.55%	74.75%	74.50%
GrandVision	73.60%	72.65%	72.84%	73.23%	73.03%	73.03%	73.07%
Operating Margin	2014	2015	2016	2017	2018	Median	Average
Fielmann AG	18.47%	18.49%	17.95%	18.35%	17.50%	18.35%	18.15%
New Look Vision Group Inc	12.19%	12.67%	11.29%	11.19%	10.68%	11.29%	11.61%
National Vision Holdings Inc	N/A	2.46%	5.95%	5.48%	3.90%	4.69%	4.45%
Jins Holdings Inc	8.22%	8.81%	7.97%	10.71%	11.06%	8.81%	9.36%
GrandVision	10.15%	11.03%	11.38%	11.13%	10.06%	11.03%	10.75%

Source: *Own creation*, data from Refinitiv Workspace

As can be noticed, the profit margins of all analysed companies are close, both in terms of gross profit margin and operating margin, to GrandVision's margins. Therefore, at the completion of this analysis, no company have been excluded from GrandVision's panel of comparables.

Once this analysis was completed, the next step involved an analysis of the revenue growth rate of the studied firms. In particular, the revenue growth rate trends of the companies, included GrandVision, have been analysed, so as to facilitate comparison and highlight some similarities or differences. The outcomes of this revenue growth analysis are presented in figure on the next page, while for the sales data of each firm from 2014 to 2018, taken from Refinitiv Workspace platform, please refer to *Appendix H*.

Figure 3.24: Revenue Growth Analysis

Revenue Growth YoY	2015	2016	2017	2018
Fielmann AG	5.99%	2.86%	3.65%	3.03%
New Look Vision Group Inc	28.86%	9.87%	15.58%	21.59%
National Vision Holdings Inc	36.20%	12.85%	12.81%	6.78%
Jins Holdings Inc	13.67%	24.01%	12.91%	0.31%
GrandVision	13.77%	3.47%	4.03%	7.86%

Correlation (revenue growth)	Fielmann	New Look Vision	National Vision	Jins	GrandVision
Fielmann AG	100.00%				
New Look Vision Group Inc	81.27%	100.00%			
National Vision Holdings Inc	96.45%	67.66%	100.00%		
Jins Holdings Inc	2.40%	-53.38%	25.72%	100.00%	
GrandVision	86.73%	96.10%	79.98%	-32.36%	100.00%

Source: *Own creation*

As appears evident, Jins Holdings has a different revenue structure than the other companies in the panel of comparables and also compared to GrandVision. Therefore, this company has been removed from the panel of comparables.

Having established the comparable firms of GrandVision (Fielmann, New Look Vision Group, and National Vision Holdings), the main market have been estimated for them. In this respect, *Figure 3.25* shows the values for three specific indexes that have been chosen for evaluation by multiples:

- Price/Earnings;
- Price/Book Value;
- Enterprise Value/EBITDA.

Of these market indexes, averages have been computed, as well as medians, minimum/maximum values, and 25th and 75th percentiles.

Figure 3.25: Revenue Growth Analysis

Peers Multiples	P/E	P/Book	EV/EBITDA
Fielmann AG	26.85	6.40	14.63
New Look Vision Group Inc	27.73	3.52	12.40
National Vision Holdings Inc	47.62	3.05	20.82

Source: *Refinitiv (2018)*

Aggregate Data	P/E	P/Book	EV/EBITDA
Average	34.07	4.32	15.95
Min	26.85	3.05	12.40
25th Percentile	26.85	3.05	12.40
Median	27.73	3.52	14.63
75th Percentile	47.62	6.40	20.82
Max	47.62	6.40	20.82

Source: *Own creation*

Subsequently, multiplying respectively the P/E index by GrandVision's earnings, P/Book Value index by the company's book value, and the EV/EBITDA by its EBITDA, yields measures of the company value (enterprise value or equity value as the case may be). The results of the above discussion, as well as a graph summarising them, can be found in *Appendix I*.

Operating the appropriate adjustments and dividing by the number of GrandVision's outstanding

shares, which is again about 254 million, the GrandVision indexes shown below in *Figure 3.26* are obtained.

Figure 3.26: GrandVision indexes

GrandVision Stock Price	P/E	P/Book	EV/EBITDA
<i>Average</i>	29.03	19.80	35.45
Min	22.88	13.97	27.56
25th Percentile	22.88	13.97	27.56
Median	23.63	16.12	32.51
75th Percentile	40.59	29.32	46.27
Max	40.59	29.32	46.27

Source: *Own creation*

It is noticeable that the values of the P/E and, especially, EV/EBITDA indexes are both above GrandVision's stock price prior to the deal announcement, whereas the P/Book Value indexes returns a closer value to it and to GrandVision's stock price resulting from the valuation via the DCF method.

3.6 Adopting the Real Options approach for assessing M&A Synergies

This Section will present the core part of the evaluation of the EssilorLuxottica-GrandVision's case study, devoted to the assessment of M&A synergies generated by the presented transaction. Such synergies will be estimated by using the Real Options approach (*Section 2.4*), which among the different methods is the one that best allows to grasp the dynamic and uncertain nature of synergies.

Particularly, the method proposed by Datar, Mathews and Johnson (2007) in their paper "*A practical method for valuing real options: The Boeing approach*" will be adopted. This method has been chosen due to its potential to draw substantial value from scenario planning by establishing a framework that readily lends itself to quantitative estimation.

In contrast to the Net Present Value (NPV) methodology, which aims to distil everything into a solitary, most probable scenario, the Datar-Mathews model revolves around stimulating different scenarios that mirror distinct market circumstances and M&A outcomes. So, unlike the NPV approach, real option analysis through DM method encapsulates the worth of such adaptability and uncertainty related to M&A synergies.

The methodology starts with determining the estimates of the stand-alone values of the revenues and costs for the buyer (EssilorLuxottica) and the seller (GrandVision). These values are then summed in order to get the baseline values of the companies as not being combined, and thus as not generating synergies.

Subsequently, the following step concerns the consideration of the various types of synergies (as mentioned in *Section 3.4*). Each type of synergy affects a specific value driver, each of which is assigned a time limit for generating the total potential of synergies.

The last step of the methodology is to reduce the combined firm estimates by the baseline forecasts without synergies. This enables to determine the cash flows arising from synergies for each scenario, split into revenue-enhancing and cost-reducing synergies. At this point, it will then be possible to use the Monte Carlo simulation to determine the value of the real options, i.e. the synergies.

As for the first step, which is the setting of baseline forecast, it has been required to estimate selected values of the stand-alone companies with regard to revenue and cost items. As for GrandVision, these values have already been calculated as part of the stand-alone company valuation presented in *Section 3.5*. Additionally, for this company, the prospective annual store visits and ARPVs (Average Revenue Per Year) – these latter calculated by dividing annual revenues by the number of visits per year – has been estimated.

Particularly, the GrandVision’s store visits per year have been computed using the average growth rate of annual shop visits from 2015 to 2018. This results in a visits per year growth rate equal to 12.74%. Moreover, in the company’s annual reports, only data on visits per day to GrandVision’s stores were specified. Therefore, it has been necessary to convert these data in visits per year, assuming three hundreds workdays per year.

The details of the calculation of annual visits and their growth percentages are shown in the figure below.

Figure 3.27: GrandVision’s Visits per Year

<i>Data in mln</i>	31-12-2014	31-12-2015	31-12-2016	31-12-2017	31-12-2018
Visits per day	0.5	0.5	0.6	0.7	0.8
Workdays	300				
Visits per year	150	150	180	210	240
Visits/year growth rate		0.00%	20.00%	16.67%	14.29%

Source: *Own creation*, data from GrandVision’s Annual Reports 2014-2018

On the contrary, in the case of EssilorLuxottica, all revenues and costs (COGS and SG&A) have been assessed at this stage. Unlike GrandVision, for EssilorLuxottica, the factors determining the company revenues (which, for GrandVision, are visits per year and ARPV) could not be analysed separately, given the young age of the combined firm – formed just in late 2018, only a few months before the announcement of the intention to pursue the acquisition of GrandVision – and the disparity in business between the merging companies, Essilor and Luxottica. Consequently, EssilorLuxottica’s revenues have been directly esteemed without transiting through the factors that determine them.

In detail, all projected values for EssilorLuxottica have been calculated assuming the average of the previous 5-Year’s growth rate for each item (Revenues, COGS/Sales, and SG&A/Sales) as the applicable growth rate, except for the revenue growth rate, which has been assumed based on the revenue growth rate of the past three years. This choice about revenue growth has been made since, unlike other drivers, the last 3-Y average significantly deviated from the last 5-Y average; therefore, the rate that most reflected the current condition of the firm has been chosen, since it is believed that similar circumstances could be found

for the integration of GrandVision' activity.

To summarise, the results of the baseline forecasts, as well as the estimated growth rates used, are illustrated in *Figure 3.28*.

Figure 3.28: Baseline Forecast

Baseline Forecast								
Sum of Stand-Alone Values								
		2018	2019	2020	2021	2022	2023	
Revenue		20.110	20.659	21.194	21.707	22.194	22.649	
Cost		16.970	17.319	17.770	18.202	18.611	18.994	
Stand-Alone Buyer - EssilorLuxottica								
Revenue		16.389	16.680	16.977	17.278	17.585	17.898	
COGS		6.213	6.211	6.322	6.434	6.548	6.665	
SG&A		7.600	7.720	7.857	7.997	8.139	8.283	
Stand-Alone Seller - GrandVision								
Visits per year		240	271	305	344	388	437	
ARPV (€)		16	15	14	13	12	11	
Revenue		3.721	3.979	4.217	4.429	4.609	4.752	
COGS		1.004	1.072	1.136	1.193	1.241	1.280	
SG&A		2.153	2.317	2.455	2.578	2.683	2.766	
Stand-Alone Drivers								
		EssilorLuxottica				GrandVision		
		Period	Item	Value		Period	Item	Value
Revenue		2019-2023	3Y Average	1,78%	Revenue	2019-2023	GV Stand-Alone Valuation	
COGS/Sales		2019-2023	5Y Average	37,24%	COGS/Sales	2019-2023	5Y Average	26,93%
SG&A/Sales		2019-2023	5Y Average	46,28%	SG&A/Sales	2019-2023	5Y Average	58,22%
					Visits per year	2019-2023	5Y Average	12,74%

Source: *Own creation*

Once the baseline forecast is assumed, reflecting the sum of the companies' values as if they are not merged, the three scenarios comprising the evaluation of synergies have been analysed. However, in order to do so, it has been first necessary to estimate the transaction-specific synergy forecasting drivers. Particularly, all synergies are considered to start manifesting in 2020, about a year after EssilorLuxottica's announcement of its intention to purchase GrandVision's shares, since a certain amount of time is considered to be required for the manifestation of these benefits for the combined firm.

Moving on to analyse each synergy that is expected to be generated by such a transaction (a description of which can be found in *Section 3.4*), regarding synergies arising from *vertical integration*, it is assumed that EssilorLuxottica's revenue increase in the most-likely scenario is equal to 0,5%, assuming the full potential after three years. For the optimistic scenario, the period is still three years, and the positive impact on revenues rises to 1%. For the pessimistic scenario, no synergies are expected.

Concurrently, a positive impact is also expected on GrandVision due to the vertical integration of the two business. In detail, it is forecasted a 0,5% increase in GrandVision's visits per year in the most-likely scenario, while a 1% increase in annual visits is estimated in the optimistic scenario. In both scenarios, the period needed to reach the maximum potential is projected to be two years starting in 2020. For the pessimistic scenario, just like EssilorLuxottica, no synergies are expected.

As stated in *Section 3.4*, a further synergy that may arise from the transaction is the opportunity for

EssilorLuxottica to *increase its market power in Europe*, due to GrandVision’s leading retail network in that region. This synergy is supposed to have a lower impact on EssilorLuxottica’s revenues, positively impacting them at 0.25% for the most-likely scenario, while for the optimistic scenario is expected to reach an increase of 0,5%. In both scenarios, it is assumed that synergies will reach the full potential after three years given the complexity of the process, while for the pessimistic scenario it is not expected any synergies.

With respect to the last category of revenue-enhancing synergies, i.e. *access to critical resources and know-how*, this is thought to have a positive impact of 0.5% on GrandVision’s ARPV in the most-likely scenario, achieving its full potential after two years. For the optimistic scenario the percentage becomes 1%, while for the pessimistic scenario no synergistic effect is considered.

Turning to the analysis of cost-reducing synergies, it is forecasted that the *supply chain optimisation and sourcing savings* may have a 0,5% impact on COGS of both GrandVision and EssilorLuxottica in the most-likely scenario, while the peak potential is set two years after the announcement. For both companies, within the optimistic scenario the impact is 1%. Furthermore, as regards the pessimistic scenario of this synergy, while for EssilorLuxottica is considered to have an impact equal to that of the most-likely scenario, for GrandVision no synergy is expected in this specific scenario.

Finally, for the *rationalization of general and administrative expenses* synergy, it is forecasted an equal impact for both companies. Particularly, it is expected that synergies will be generated only in most-likely and optimistic scenarios, whereas for the pessimistic scenario no synergy is assumed. For these two scenarios, an impact on SG&A expenses equal to 1% is assumed for the most-likely scenario and 2% for the pessimistic scenario, with the full potential to be reached after two years.

The assumptions described so far, underlying the appraisal of the various synergy types, distinguished into revenue-enhancing and cost-reducing synergies, are provided in the figure below.

Figure 3.29: Synergy Forecasting Drivers

Category	Type of synergy	Pessimistic	Most-likely	Optimistic	Affects
Revenue-enhancing synergies	Vertical integration (buyer)	0%	0,5%	1%	Revenues (buyer)
	Years to achieve full potential	N/A	3	3	
	Period	N/A	2020-2023	2020-2023	
	Vertical integration (seller)	0%	0,5%	1,0%	Visits per year (seller)
	Years to achieve full potential	N/A	2	2	
	Period	N/A	2020-2023	2020-2023	
	Increased market power in Europe (buyer)	0%	0,25%	0,5%	Revenues (buyer)
	Years to achieve full potential	N/A	3	3	
Period	N/A	2020-2023	2020-2023		
Access to critical resources and know-how	0%	0,5%	1%	ARPV (seller)	
Years to achieve full potential	N/A	2	2		
Period	N/A	2020-2023	2020-2023		
Cost-reducing synergies	Supply chain optimisation and sourcing savings (buyer)	0,5%	0,5%	1%	COGS (buyer)
	Years to achieve full potential	2	2	2	
	Period	2020-2023	2020-2023	2020-2023	
	Supply chain optimisation and sourcing savings (seller)	0%	0,5%	1%	COGS (seller)
	Years to achieve full potential	N/A	2	2	
	Period	N/A	2020-2023	2020-2023	
	G&A rationalization (buyer)	0%	1%	2%	SG&A expenses (buyer)
	Years to achieve full potential	N/A	2	2	
Period	N/A	2020-2023	2020-2023		
G&A rationalization (seller)	0%	1%	2%	SG&A expenses (seller)	
Years to achieve full potential	N/A	2	2		
Period	N/A	2020-2023	2020-2023		

Source: Own creation

Having computed the forecasting drivers of synergies, it is therefore possible to use them for the operating income assessment of each of the three scenarios. However, in order to determine the value of revenue-enhancing and cost-reducing synergies, it is first necessary to assess the combined WACC, computing the values of the combined firm based on the respective weights of enterprise values of GrandVision and EssilorLuxottica. This rate is estimated at 6.74%. Data on the combined company, as well as EssilorLuxottica and GrandVision, are presented in *Figure 3.30*.

Figure 3.30: EssilorLuxottica – GrandVision Combined WACC

	EssilorLuxottica	GrandVision	Combined
Cost of equity (r_e)	7,78%	7,85%	7,79%
Cost of debt (r_d)	1,26%	1,26%	1,26%
E/V	85,23%	80,52%	84,76%
D/V	14,77%	19,49%	15,24%
EV (€, mln)	51.514,54	5.697,48	57.212,02
WACC	6,76%	6,51%	6,74%

Source: *Own creation*

It has been also fundamental to forecast integration costs, which remain constant across all scenarios. These have been estimated according to an EY (2019) article, which provided some observations regarding integration costs in M&A deals based on data collected on a sample of 70 deals from 2010 to 2016.

In particular, this article stated that in the deal value range of \$5 billion to \$10 billion, the integration costs ranged from 1% to 5% of the total deal value. In order to reach a conservative estimate of synergies and given the complexity of the implemented transaction, a percentage of 5% on the total acquisition value was assumed for assessing integration costs. Therefore, since the total value of the deal covered by the case study is €7.2 billion for the purchase of the whole of GrandVision's shares, the integration costs for this transaction turn out to be €312,82 million.

These costs have been then distributed from 2019 to 2023, with a greater significance given to the first year of the combined firm, which reports costs amounting to one-half of the total integration costs, since it is assumed that considerable integration investments is needed at the beginning of the new entity's operations. Meanwhile, the other half has been equally shared over the following four years 2020-2023.

Once all factors driving the operating income of each scenario have been assessed, and assuming a null long-term growth rate of synergies after the forecasted horizon, the NPV of the three scenarios can be computed. Details for each scenario are given in *Appendix J* (most-likely scenario), *Appendix K* (optimistic scenario), and *Appendix L* (pessimistic scenario). It is relevant to note that no terminal value has been accounted for the pessimistic scenario since it is assumed that beyond the considered horizon the transaction would no longer generates any synergy.

Below in *Figure 3.31* are details of the annual present value changes in operating income for the three

scenarios, which will be used as input for the Datar & Mathews model.

Figure 3.31: Real Options Scenarios

	Scenario	2019	2020	2021	2022	2023
PV Change in Operating Income	Pessimistic	-	14	26	25	24
	Most-likely	-	112	181	241	1.951
	Optimistic	-	200	338	415	3.343

Source: *Own creation*. Values in € M

These data have been used as inputs for the Datar & Mathews model. In fact, these inputs have been applied to determine the triangular distributions for each year of the forecast, with the most-likely scenario representing the apex of the triangle and the pessimistic and optimistic scenarios constituting the vertices of the base.

In addition, a correlation of 0,5 was set between the given distributions, ensuring a certain linkage between the value of synergies of consecutive years. Thus, if the value of synergies for a specific year is found to be high, it will be more likely that the value of synergies for the following year will be high as well. This value is in line with the theory results of Wu (2014), which estimates a correlation between following-year sales equal to 0.53.

In order to test the soundness of the chosen correlation, the value of M&A synergies arising from the analysed transaction has also been computed by utilizing “best practices” in relation to the estimation of volatilities within real options. Specifically, the annualized volatility implied in the stock prices of a panel of comparable has been computed. This panel is composed of the following companies that exhibit a business model resembling EssilorLuxottica’s:

- Carl Zeiss Meditec AG;
- Hoya Corp;
- Cooper Companies Inc;
- STAAR Surgical Co;
- Safilo Group SpA;
- Fielmann Group AG.

Once the daily stock prices of these firms from June 2014 to June 2019 have been dragged from Refinitiv Workspace and the daily returns of each comparable have been computed, it has been possible to calculate the standard deviations (σ) of each of these comparable firms, as well as the respective average, which are presented in the figure below. The results related to the process of determining standard deviations are provided in full in *Appendix M*.

Figure 3.32: Comparables' standard deviation

	Zeiss	Hoya	Cooper	STAAR	Safilo	Fielmann
Standard deviation	0,01609	0,01796	0,01572	0,03447	0,02583	0,01269
Average SD	0,02046					

Source: *Own creation*

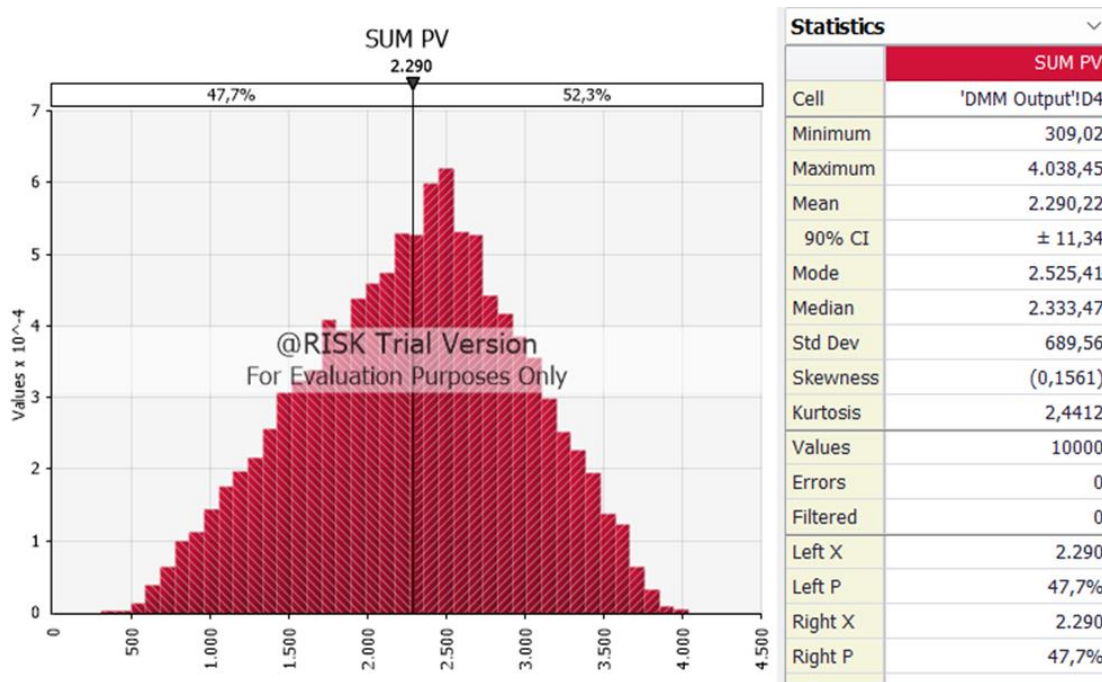
After obtaining the average of the comparables' standard deviations, the analysis finally came to the estimation of the panel's annualized standard deviation through the formula: $\text{Average } \sigma * \sqrt{252}$. This calculation yields a value of 0.33.

However, it has turned out that, when employing "best practices", no significant deviations are observed in estimating synergy values compared to the approach identified by Wu (2014). This result reinforces confidence in the selected correlation value and in the methodological approach used for the purpose of this thesis.

Hence, with all inputs available, it is possible to run the Monte Carlo simulation using an Excel add-in called @Risk by Palisade. For this particular simulation, 10,000 iterations have been executed, as recommended by the original paper by Datar, Mathews and Johnson (2007). Setting the sum of the synergy present values of all years as the simulation output, the mean value of the Monte Carlo simulation is equal to 2,290.22 million. This specifies the present value of M&A synergies that this deal is expected to generate, by using the real options approach.

Figure 3.32 below displays the distribution and statistics of observations obtained from the 10,000-iterations simulation.

Figure 3.33: Datar – Mathews Output



Source: *Own creation*. Values in € M

To be noted, the distribution takes the shape of a bell with 309.02 million as the minimum value and 4,038.45 million as the maximum value. It can be appreciated from the graph the potential of applying the real options approach for valuing synergies of an M&A deal. Indeed, by doing so, it has been possible to encompass in the evaluation the dynamism of such synergies and, thus, achieve a valuation that takes into account more factors than other valuation techniques.

Having estimated the present value of benefits arising from the acquisition, it is a matter of applying *equation 2.13* to estimate the Real Options Value (ROV), i.e. $ROV = \text{Risk-Adjusted Success Probability} * (\text{Benefits} - \text{Costs})$.

In this regard, the costs are equal to the present values of the forecasted integration costs, which are the same for all scenarios. These costs amount to 312.82 million euros.

Concerning the risk-adjusted success probability, on the other hand, only one observation out of 10 thousand returned a value for benefits lower than costs. This means that the probability of success of the deal proves to be 99.99%.

Therefore, by applying the aforementioned formula, the value of the real options associated with M&A synergies is €1,977.20 million. Adding up to this value the target's equity value – assessed in *Section 3.5.1* – yields, according to the analysis performed, the price that should have been paid by EssilorLuxottica to acquire GrandVision. This price turns out to be €7.58 billion, including consideration of all synergies of the deal.

It is also possible to determine the price per share, by dividing the estimated total deal value by the number of outstanding shares at the date of the deal announcement. This analysis results in a price per share of 29.88 euro, which is approximately 5% higher than the price actually bargained between the two companies.

CONCLUSIONS

In the context of increased general interest in M&A transactions, this Master's thesis was aimed at witnessing the relevance of the real options approach for estimating synergies from M&A deals, taking EssilorLuxottica's finalized acquisition of GrandVision as case study. Indeed, conventional valuation approaches presents troubles in capturing the full value of synergies because they do not adequately consider uncertainty. Therefore, this thesis seeks to investigate whether real options-based models can be a robust and sound alternative for evaluating these kinds of synergies.

Throughout the thesis, a definition of mergers and acquisitions was first provided, as well as the ordinary lifecycle of such transactions and the main reasons for successful or unsuccessful deals, along with an overview of the current M&A market and an outline of future trends. It then turned to analyse the main methods of M&A valuation, delving into both the traditional methods of DCF and multiples as well as more innovative methods, such as real options. Lastly, some insights was presented concerning the valuation of synergies arising from mergers and acquisitions, and the value of control that derives from a change in company management.

Once the preliminary knowledge is presented, the notions introduced in the first two chapters have been further explored to introduce a new dynamic approach for evaluating M&A synergies of GrandVision-EssilorLuxottica case study utilizing real options. In particular, the Datar-Mathews model was adopted, based on triangular distributions and the application of Monte Carlo simulation.

Under the assumptions considered, the Datar-Mathews model yielded a real option value (ROV) of the combined company's synergies equal to €1,977.20 million, meaning a total deal value of €7,582.15 million. This value was determined as the sum of the stand-alone value of the target company, GrandVision, and the synergies that could be brought from the acquisition by EssilorLuxottica.

It is worth remembering that only the data and information available up to the time the transaction was announced were taken into account into the evaluation of the companies. This means that some events that significantly impacted the company's sales and financial performance, but occurred later to the announcement, such as the Covid-19 pandemic, were not considered in the assessment of the case study.

In addition, excluded from this computation was the value of the change in control, which Damodaran considers crucial in estimating the value of an M&A deal. This choice was made since EssilorLuxottica declared that the company felt a sentiment of appreciation for the performance of GrandVision's management up to that point, and would keep S. Borchert and W. Eelman in their position as CEO and CFO of the firm, respectively, even after the closing of the acquisition. Therefore, there is no reason to envision substantial changes in the company's operational and financial management, and thus any extra value generated by the transaction can be attributed entirely to synergies.

Although the results obtained are slightly higher than the price actually incurred for the acquisition and the subsequent launch of the tender offer, they enable the research question posed at the beginning of

the thesis to be fully and positively answered. Actually, by means of this thesis and the results obtained from the analysis of the case study, it has been possible to demonstrate the absolute validity of the real options approach for evaluating M&A synergies.

Hence, this thesis has significant implications also for managerial purposes. In most instances, managers exhibit a certain degree of hesitation when it comes to evaluating M&A synergies using real option models, in contrast to more conventional methods like Discounted Cash Flow (DCF) and multiples. This reluctance may stem from the intricacies involved in applying the real option approach or its tendency to yield potentially inflated valuations for projects or investments characterized by uncertainty or even the lack of awareness certain managers still have regarding this approach. These motives most often lead the leadership of companies to bypass the use of real options assessing the value of relevant projects, such as the case of evaluating M&A synergies.

On the contrary, dismantling such beliefs, the results of this thesis demonstrate that real-option based methods, and in particular the Datar-Mathews method, can be ideal alternatives to traditional methods when dealing with the assessment of M&A synergies, although it requires advanced simulation and software capabilities. Indeed, this approach provides a more accurate assessment of synergies by relying on the consideration of various assumptions and multiple distributions.

Thus, it can be asserted that real option-based methods can be efficient supports in the purchaser's perspective to assess the worthiness of the transaction. Likewise, in the case of the target firm, real option valuation can prove advantageous during negotiation scenarios. In this light, the real option method for evaluating M&A deal synergies could be interpreted as a supplementary method to traditional evaluation approaches that adds information in order to obtain the most reasonable estimation of the value of the whole transaction.

However, this research work presents certain limitations since only publicly available information regarding the deal and synergies was consulted, without having access to strictly confidential documents of the two firms involved in the transaction. This surely limits the M&A valuation as the exact plans regarding the synergy estimation, and the related impacts, that the two firms would have wished to implement as a result of the acquisition were not forthcoming. In addition, only operational synergies – split into revenue-enhancing and cost-reducing synergies – were considered, not taking into account financial synergies arising from the M&A transaction.

To delve deeper into this research, it could be interesting to assess other kinds of synergies, for instance covering financial synergies, while employing the most suitable real option models tailored to each specific synergy type. Furthermore, an expanded exploration of the utilisation of real options in M&A context could involve a comparative analysis across multiple case studies, highlighting commonalities and disparities, thus identifying whether the real options approach can be applied regardless of the transaction features, such as company size, target industry, and life cycle stage.

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APPENDIXES

Appendix A.1

Beta Computation (Indexes and Stock Prices)

Exchange Date	Price			
	FTSE All World (EUR)	STOXX Europe 600	AEX	GrandVision
03-giu-2016	234.84	341.29	445.31	24.75
10-giu-2016	235.86	332.92	435.77	23.64
17-giu-2016	231.01	325.78	421.77	23.49
24-giu-2016	230.77	321.98	424.20	23.38
01-lug-2016	237.94	332.24	438.85	23.91
08-lug-2016	239.56	327.35	433.77	23.68
15-lug-2016	246.13	337.92	447.51	23.92
22-lug-2016	248.32	340.33	453.35	24.20
29-lug-2016	246.07	341.89	449.83	24.35
05-ago-2016	247.57	341.38	448.12	25.10
12-ago-2016	249.17	346.09	454.09	26.00
19-ago-2016	244.92	340.14	448.72	25.96
26-ago-2016	246.81	343.72	453.01	25.50
02-set-2016	248.74	350.44	463.60	25.47
09-set-2016	244.08	345.52	452.88	24.99
16-set-2016	243.43	337.82	439.07	24.75
23-set-2016	247.14	345.34	454.48	25.23
30-set-2016	245.85	342.92	452.33	24.75
07-ott-2016	245.42	339.64	450.06	24.35
14-ott-2016	247.60	339.95	450.50	24.26
21-ott-2016	250.99	344.29	457.40	24.41
28-ott-2016	247.20	340.80	455.38	20.95
04-nov-2016	239.27	328.80	440.51	20.43
11-nov-2016	249.48	337.50	445.41	19.61
18-nov-2016	255.55	339.39	450.68	19.74
25-nov-2016	259.05	342.45	457.99	19.92
02-dic-2016	255.36	339.36	449.60	18.80
09-dic-2016	265.72	355.38	469.77	20.61
16-dic-2016	267.23	360.02	477.70	20.72
23-dic-2016	267.20	359.98	482.86	20.92
30-dic-2016	265.35	361.42	483.17	20.91
06-gen-2017	269.77	365.45	487.00	20.90
13-gen-2017	268.04	365.94	488.09	21.56
20-gen-2017	265.79	362.58	485.98	20.78
27-gen-2017	269.39	366.38	485.87	22.10
03-feb-2017	267.63	364.07	485.92	22.35
10-feb-2017	272.80	367.39	489.56	22.45
17-feb-2017	276.76	370.22	499.08	22.33
24-feb-2017	278.85	370.01	494.90	24.05
03-mar-2017	278.00	375.23	505.86	23.73
10-mar-2017	276.19	373.23	511.14	23.23
17-mar-2017	278.02	378.32	516.24	22.80
24-mar-2017	274.30	376.51	511.53	23.15
31-mar-2017	278.74	381.14	516.54	22.96
07-apr-2017	279.32	381.26	518.70	22.92
14-apr-2017	276.98	380.58	515.77	23.60
21-apr-2017	275.26	378.12	512.19	23.61
28-apr-2017	276.27	387.09	521.13	23.97
05-mag-2017	276.10	394.54	533.27	23.50
12-mag-2017	278.02	395.63	534.71	23.81
19-mag-2017	271.19	391.51	526.92	22.97
26-mag-2017	274.60	391.35	528.03	23.27
02-giu-2017	275.10	392.55	526.74	23.80
09-giu-2017	275.67	390.39	527.30	23.72
16-giu-2017	275.25	388.60	520.67	23.85
23-giu-2017	275.68	387.62	519.50	24.00
30-giu-2017	269.09	379.37	507.15	23.45
07-lug-2017	268.94	380.18	509.92	23.93
14-lug-2017	273.01	386.84	521.07	24.42
21-lug-2017	270.13	380.16	522.22	23.97
28-lug-2017	268.23	378.34	525.53	23.95

04-ago-2017	269.00	382.53	529.09	22.12
11-ago-2017	263.54	372.14	516.97	21.51
18-ago-2017	264.43	374.20	519.64	21.17
25-ago-2017	263.18	374.07	517.42	20.92
01-set-2017	267.39	376.14	518.18	20.82
08-set-2017	263.37	375.51	518.82	21.50
15-set-2017	268.39	380.71	526.78	21.38
22-set-2017	268.96	383.22	528.03	21.40
29-set-2017	272.32	388.16	537.06	21.40
06-ott-2017	276.35	389.47	539.90	21.18
13-ott-2017	276.70	391.42	546.21	21.30
20-ott-2017	278.27	390.13	544.63	21.59
27-ott-2017	282.17	393.43	549.44	22.60
03-nov-2017	284.00	396.06	555.15	21.70
10-nov-2017	282.00	388.69	547.32	20.53
17-nov-2017	278.20	383.80	536.62	20.64
24-nov-2017	278.67	386.63	540.63	20.84
01-dic-2017	279.89	383.97	535.57	21.46
08-dic-2017	283.21	389.25	547.22	21.68
15-dic-2017	285.25	388.19	548.67	21.47
22-dic-2017	285.12	390.28	548.48	21.16
29-dic-2017	282.87	389.18	544.58	21.30
05-gen-2018	289.54	397.35	558.16	20.90
12-gen-2018	289.41	398.49	561.10	20.30
19-gen-2018	291.80	400.88	569.30	21.00
26-gen-2018	292.96	400.57	566.79	19.49
02-feb-2018	282.18	388.07	550.08	18.38
09-feb-2018	270.89	368.61	518.33	17.91
16-feb-2018	278.60	380.62	532.27	18.61
23-feb-2018	281.88	381.16	534.09	18.15
02-mar-2018	274.56	367.04	518.72	18.37
09-mar-2018	282.24	378.24	537.14	18.53
16-mar-2018	281.03	377.71	536.92	18.54
23-mar-2018	267.35	365.82	521.45	17.90
30-mar-2018	271.45	370.87	529.52	18.52
06-apr-2018	270.57	374.82	539.29	18.61
13-apr-2018	273.84	379.20	548.05	18.85
20-apr-2018	275.92	381.84	550.38	19.07
27-apr-2018	278.80	384.64	554.94	20.20
04-mag-2018	281.35	387.03	555.70	20.34
11-mag-2018	287.53	392.40	562.27	20.74
18-mag-2018	289.48	394.67	567.03	21.02
25-mag-2018	291.26	391.08	562.77	20.52
01-giu-2018	290.51	386.91	559.18	20.34
08-giu-2018	291.47	385.12	560.03	20.08
15-giu-2018	294.27	389.13	561.71	20.24
22-giu-2018	289.92	385.01	560.34	20.28
29-giu-2018	285.53	379.93	551.68	19.25
06-lug-2018	286.55	382.36	553.62	19.23
13-lug-2018	291.00	385.03	560.12	19.33
20-lug-2018	290.64	385.62	572.20	19.83
27-lug-2018	295.07	392.08	576.24	20.38
03-ago-2018	296.58	389.16	572.29	19.70
10-ago-2018	298.38	385.86	562.98	21.40
17-ago-2018	296.09	381.06	552.95	21.14
24-ago-2018	295.09	383.56	560.29	21.02
31-ago-2018	297.49	382.26	558.42	21.18
07-set-2018	293.07	373.77	538.51	20.52
14-set-2018	294.81	377.85	540.53	20.04
21-set-2018	296.64	384.29	549.79	20.58
28-set-2018	298.14	383.18	549.62	21.20
05-ott-2018	294.89	376.41	539.51	20.72
12-ott-2018	282.54	358.95	516.29	20.32
19-ott-2018	283.32	361.24	525.17	20.56
26-ott-2018	275.12	352.34	507.52	20.50
02-nov-2018	284.18	364.08	521.80	22.84
09-nov-2018	288.18	365.74	529.55	21.98
16-nov-2018	282.44	357.71	522.43	20.52

23-nov-2018	276.83	353.98	513.85	20.54
30-nov-2018	286.42	357.49	519.37	19.89
07-dic-2018	275.10	345.45	503.98	19.81
14-dic-2018	273.62	347.21	506.53	19.17
21-dic-2018	258.53	336.67	484.81	18.80
28-dic-2018	261.46	336.23	484.17	18.69
04-gen-2019	266.58	343.38	492.01	19.45
11-gen-2019	272.49	349.20	498.65	19.18
18-gen-2019	280.88	357.05	509.70	18.99
25-gen-2019	280.25	357.84	515.10	19.52
01-feb-2019	283.09	359.71	523.24	19.62
08-feb-2019	284.53	358.07	527.99	18.78
15-feb-2019	290.96	368.94	539.62	19.70
22-feb-2019	293.19	371.23	541.37	19.63
01-mar-2019	293.28	374.24	538.59	19.13
08-mar-2019	290.52	370.57	530.55	19.47
15-mar-2019	296.31	381.10	552.18	19.35
22-mar-2019	295.06	376.03	543.90	19.02
29-mar-2019	299.05	379.09	548.98	19.30
05-apr-2019	305.30	388.23	562.58	19.25
12-apr-2019	304.27	387.53	561.61	19.29
19-apr-2019	305.98	390.46	569.61	20.40
26-apr-2019	309.85	391.01	567.18	19.76
03-mag-2019	309.09	390.37	568.72	20.00
10-mag-2019	300.14	377.14	550.87	19.00
17-mag-2019	299.74	381.51	557.91	18.99
24-mag-2019	295.56	375.89	547.21	18.92
31-mag-2019	290.80	369.06	540.49	19.14
07-giu-2019	296.77	377.48	550.24	19.85
14-giu-2019	300.75	378.81	553.24	20.14
21-giu-2019	303.51	384.76	562.39	20.32
28-giu-2019	303.59	384.87	561.76	20.44

Appendix A.2

Beta Computation (Indexes and Stock Returns)

Exchange Date	Return			
	FTSE All World (EUR)	STOXX Europe 600	AEX	GrandVision
03-giu-2016				
10-giu-2016	0.43%	-2.45%	-2.14%	-4.47%
17-giu-2016	-2.05%	-2.14%	-3.21%	-0.63%
24-giu-2016	-0.11%	-1.17%	0.58%	-0.49%
01-lug-2016	3.11%	3.19%	3.45%	2.29%
08-lug-2016	0.68%	-1.47%	-1.16%	-0.96%
15-lug-2016	2.74%	3.23%	3.17%	1.01%
22-lug-2016	0.89%	0.71%	1.30%	1.15%
29-lug-2016	-0.91%	0.46%	-0.78%	0.62%
05-ago-2016	0.61%	-0.15%	-0.38%	3.10%
12-ago-2016	0.65%	1.38%	1.33%	3.57%
19-ago-2016	-1.70%	-1.72%	-1.18%	-0.15%
26-ago-2016	0.77%	1.05%	0.96%	-1.75%
02-set-2016	0.78%	1.96%	2.34%	-0.12%
09-set-2016	-1.87%	-1.40%	-2.31%	-1.88%
16-set-2016	-0.27%	-2.23%	-3.05%	-0.96%
23-set-2016	1.52%	2.23%	3.51%	1.94%
30-set-2016	-0.52%	-0.70%	-0.47%	-1.90%
07-ott-2016	-0.18%	-0.96%	-0.50%	-1.64%
14-ott-2016	0.89%	0.09%	0.10%	-0.35%
21-ott-2016	1.37%	1.28%	1.53%	0.60%
28-ott-2016	-1.51%	-1.01%	-0.44%	-14.18%
04-nov-2016	-3.21%	-3.52%	-3.27%	-2.48%
11-nov-2016	4.27%	2.65%	1.11%	-4.01%
18-nov-2016	2.43%	0.56%	1.18%	0.69%
25-nov-2016	1.37%	0.90%	1.62%	0.89%
02-dic-2016	-1.42%	-0.90%	-1.83%	-5.60%
09-dic-2016	4.06%	4.72%	4.49%	9.60%
16-dic-2016	0.57%	1.31%	1.69%	0.53%
23-dic-2016	-0.01%	-0.01%	1.08%	0.97%
30-dic-2016	-0.69%	0.40%	0.06%	-0.05%
06-gen-2017	1.67%	1.12%	0.79%	-0.02%
13-gen-2017	-0.64%	0.13%	0.22%	3.13%
20-gen-2017	-0.84%	-0.92%	-0.43%	-3.60%
27-gen-2017	1.36%	1.05%	-0.02%	6.35%
03-feb-2017	-0.65%	-0.63%	0.01%	1.13%
10-feb-2017	1.93%	0.91%	0.75%	0.43%
17-feb-2017	1.45%	0.77%	1.94%	-0.51%
24-feb-2017	0.75%	-0.06%	-0.84%	7.68%
03-mar-2017	-0.31%	1.41%	2.21%	-1.33%
10-mar-2017	-0.65%	-0.53%	1.04%	-2.11%
17-mar-2017	0.66%	1.36%	1.00%	-1.83%
24-mar-2017	-1.34%	-0.48%	-0.91%	1.54%
31-mar-2017	1.62%	1.23%	0.98%	-0.84%
07-apr-2017	0.21%	0.03%	0.42%	-0.17%
14-apr-2017	-0.84%	-0.18%	-0.56%	2.99%
21-apr-2017	-0.62%	-0.65%	-0.69%	0.02%
28-apr-2017	0.37%	2.37%	1.75%	1.55%
05-mag-2017	-0.06%	1.92%	2.33%	-1.96%
12-mag-2017	0.70%	0.28%	0.27%	1.32%
19-mag-2017	-2.46%	-1.04%	-1.46%	-3.55%
26-mag-2017	1.25%	-0.04%	0.21%	1.31%
02-giu-2017	0.18%	0.31%	-0.24%	2.30%
09-giu-2017	0.21%	-0.55%	0.11%	-0.36%
16-giu-2017	-0.15%	-0.46%	-1.26%	0.57%
23-giu-2017	0.16%	-0.25%	-0.22%	0.63%
30-giu-2017	-2.39%	-2.13%	-2.38%	-2.29%
07-lug-2017	-0.05%	0.21%	0.55%	2.03%
14-lug-2017	1.51%	1.75%	2.19%	2.05%
21-lug-2017	-1.05%	-1.73%	0.22%	-1.82%
28-lug-2017	-0.71%	-0.48%	0.63%	-0.08%

04-ago-2017	0.29%	1.11%	0.68%	-7.66%
11-ago-2017	-2.03%	-2.72%	-2.29%	-2.74%
18-ago-2017	0.34%	0.55%	0.52%	-1.58%
25-ago-2017	-0.47%	-0.03%	-0.43%	-1.18%
01-set-2017	1.60%	0.55%	0.15%	-0.50%
08-set-2017	-1.51%	-0.17%	0.12%	3.29%
15-set-2017	1.91%	1.38%	1.53%	-0.56%
22-set-2017	0.21%	0.66%	0.24%	0.07%
29-set-2017	1.25%	1.29%	1.71%	0.00%
06-ott-2017	1.48%	0.34%	0.53%	-1.00%
13-ott-2017	0.13%	0.50%	1.17%	0.57%
20-ott-2017	0.56%	-0.33%	-0.29%	1.36%
27-ott-2017	1.40%	0.85%	0.88%	4.68%
03-nov-2017	0.65%	0.67%	1.04%	-4.00%
10-nov-2017	-0.70%	-1.86%	-1.41%	-5.39%
17-nov-2017	-1.35%	-1.26%	-1.95%	0.56%
24-nov-2017	0.17%	0.74%	0.75%	0.97%
01-dic-2017	0.44%	-0.69%	-0.94%	2.98%
08-dic-2017	1.19%	1.38%	2.18%	1.00%
15-dic-2017	0.72%	-0.27%	0.26%	-0.97%
22-dic-2017	-0.04%	0.54%	-0.03%	-1.44%
29-dic-2017	-0.79%	-0.28%	-0.71%	0.66%
05-gen-2018	2.36%	2.10%	2.49%	-1.85%
12-gen-2018	-0.04%	0.29%	0.53%	-2.87%
19-gen-2018	0.82%	0.60%	1.46%	3.45%
26-gen-2018	0.40%	-0.08%	-0.44%	-7.19%
02-feb-2018	-3.68%	-3.12%	-2.95%	-5.70%
09-feb-2018	-4.00%	-5.01%	-5.77%	-2.56%
16-feb-2018	2.84%	3.26%	2.69%	3.91%
23-feb-2018	1.18%	0.14%	0.34%	-2.47%
02-mar-2018	-2.60%	-3.70%	-2.88%	1.21%
09-mar-2018	2.80%	3.05%	3.55%	0.87%
16-mar-2018	-0.43%	-0.14%	-0.04%	0.05%
23-mar-2018	-4.87%	-3.15%	-2.88%	-3.45%
30-mar-2018	1.53%	1.38%	1.55%	3.46%
06-apr-2018	-0.33%	1.07%	1.85%	0.49%
13-apr-2018	1.21%	1.17%	1.62%	1.29%
20-apr-2018	0.76%	0.70%	0.43%	1.17%
27-apr-2018	1.04%	0.73%	0.83%	5.93%
04-mag-2018	0.91%	0.62%	0.14%	0.69%
11-mag-2018	2.20%	1.39%	1.18%	1.97%
18-mag-2018	0.68%	0.58%	0.85%	1.35%
25-mag-2018	0.62%	-0.91%	-0.75%	-2.38%
01-giu-2018	-0.26%	-1.07%	-0.64%	-0.88%
08-giu-2018	0.33%	-0.46%	0.15%	-1.28%
15-giu-2018	0.96%	1.04%	0.30%	0.80%
22-giu-2018	-1.48%	-1.06%	-0.24%	0.20%
29-giu-2018	-1.51%	-1.32%	-1.55%	-5.08%
06-lug-2018	0.36%	0.64%	0.35%	-0.10%
13-lug-2018	1.55%	0.70%	1.17%	0.52%
20-lug-2018	-0.12%	0.15%	2.16%	2.59%
27-lug-2018	1.52%	1.68%	0.71%	2.77%
03-ago-2018	0.51%	-0.74%	-0.69%	-3.34%
10-ago-2018	0.61%	-0.85%	-1.63%	8.63%
17-ago-2018	-0.77%	-1.24%	-1.78%	-1.21%
24-ago-2018	-0.34%	0.66%	1.33%	-0.57%
31-ago-2018	0.81%	-0.34%	-0.33%	0.76%
07-set-2018	-1.49%	-2.22%	-3.57%	-3.12%
14-set-2018	0.60%	1.09%	0.38%	-2.34%
21-set-2018	0.62%	1.70%	1.71%	2.69%
28-set-2018	0.51%	-0.29%	-0.03%	3.01%
05-ott-2018	-1.09%	-1.77%	-1.84%	-2.26%
12-ott-2018	-4.19%	-4.64%	-4.30%	-1.93%
19-ott-2018	0.28%	0.64%	1.72%	1.18%
26-ott-2018	-2.90%	-2.46%	-3.36%	-0.29%
02-nov-2018	3.29%	3.33%	2.81%	11.41%
09-nov-2018	1.41%	0.46%	1.49%	-3.77%
16-nov-2018	-1.99%	-2.20%	-1.34%	-6.64%

23-nov-2018	-1.99%	-1.04%	-1.64%	0.10%
30-nov-2018	3.46%	0.99%	1.07%	-3.16%
07-dic-2018	-3.95%	-3.37%	-2.96%	-0.40%
14-dic-2018	-0.54%	0.51%	0.51%	-3.23%
21-dic-2018	-5.51%	-3.04%	-4.29%	-1.93%
28-dic-2018	1.13%	-0.13%	-0.13%	-0.59%
04-gen-2019	1.96%	2.13%	1.62%	4.07%
11-gen-2019	2.21%	1.69%	1.35%	-1.39%
18-gen-2019	3.08%	2.25%	2.22%	-0.99%
25-gen-2019	-0.22%	0.22%	1.06%	2.79%
01-feb-2019	1.01%	0.52%	1.58%	0.51%
08-feb-2019	0.51%	-0.46%	0.91%	-4.28%
15-feb-2019	2.26%	3.04%	2.20%	4.90%
22-feb-2019	0.77%	0.62%	0.32%	-0.36%
01-mar-2019	0.03%	0.81%	-0.51%	-2.55%
08-mar-2019	-0.94%	-0.98%	-1.49%	1.78%
15-mar-2019	1.99%	2.84%	4.08%	-0.62%
22-mar-2019	-0.42%	-1.33%	-1.50%	-1.71%
29-mar-2019	1.35%	0.81%	0.93%	1.47%
05-apr-2019	2.09%	2.41%	2.48%	-0.26%
12-apr-2019	-0.34%	-0.18%	-0.17%	0.21%
19-apr-2019	0.56%	0.76%	1.42%	5.75%
26-apr-2019	1.27%	0.14%	-0.43%	-3.14%
03-mag-2019	-0.24%	-0.16%	0.27%	1.21%
10-mag-2019	-2.90%	-3.39%	-3.14%	-5.00%
17-mag-2019	-0.13%	1.16%	1.28%	-0.05%
24-mag-2019	-1.40%	-1.47%	-1.92%	-0.37%
31-mag-2019	-1.61%	-1.82%	-1.23%	1.16%
07-giu-2019	2.05%	2.28%	1.80%	3.71%
14-giu-2019	1.34%	0.35%	0.55%	1.46%
21-giu-2019	0.92%	1.57%	1.65%	0.89%
28-giu-2019	0.03%	0.03%	-0.11%	0.59%

Appendix B

Federal Republic of Germany's 10Y Government bond issuance (January – November 2018)

No.	Date	ISIN	Bond'	Coupon	Maturity	Maturity	Issuance volume (€ m)	Type	Bids (€ m)	Competitive Bids (€ m)	competitive Bids /€ m	Allotted Volume (€ m)	Lowest accepted Price	Weighted Average Price	Average Yield (%)	Retention Quote (€ m)	Bid-to-Cover Rat	Retention / Percenta	Bid / Offer
2	2018-01-10	DE0001102440	Bund	0.50%	2028-02-15	10 Y	5,000	N	4,561	1,060	3,501	4,025.95	99.6	99.63	0.54	974.05	1.1	19.5%	0.9
7	2018-02-07	DE0001102440	Bund	0.50%	2028-02-15	10 Y	3,000	R	3,756	1,247	2,509	2,492.20	98.16	98.17	0.69	507.80	1.5	16.9%	1.3
11	2018-02-28	DE0001102440	Bund	0.50%	2028-02-15	10 Y	3,000	R	2,865	620	2,245	2,412.75	98.31	98.32	0.67	587.25	1.2	19.6%	1.0
17	2018-03-21	DE0001102440	Bund	0.50%	2028-02-15	10 Y	3,000	R	3,127	1,182	1,945	2,446.50	99.08	99.08	0.60	553.50	1.3	18.5%	1.0
22	2018-04-18	DE0001102440	Bund	0.50%	2028-02-15	10 Y	3,000	R	3,492	844	2,648	2,455.80	99.94	99.94	0.51	544.20	1.4	18.1%	1.2
28	2018-05-16	DE0001102440	Bund	0.50%	2028-02-15	10 Y	2,000	R	4,416	1,347	3,069	1,589.60	98.88	98.88	0.62	410.40	2.8	20.5%	2.2
34	2018-06-13	DE0001102440	Bund	0.50%	2028-02-15	10 Y	2,000	R	1,665	334	1,331	1,535.00	100.15	100.17	0.48	465.00	1.1	23.3%	0.8
39	2018-07-11	DE0001102457	Bund	0.25%	2028-08-15	10 Y	4,000	N	5,185	2,234	2,951	3,188.25	98.89	98.90	0.36	811.75	1.6	20.3%	1.3
44	2018-08-01	DE0001102457	Bund	0.25%	2028-08-15	10 Y	3,000	R	4,259	1,280	2,979	2,373.45	97.84	97.84	0.47	626.55	1.8	20.9%	1.4
48	2018-08-22	DE0001102457	Bund	0.25%	2028-08-15	10 Y	3,000	R	2,987	972	2,015	2,423.75	99.21	99.22	0.33	576.25	1.2	19.2%	1.0
54	2018-09-19	DE0001102457	Bund	0.25%	2028-08-15	10 Y	3,000	R	6,181	2,380	3,801	2,426.40	97.71	97.71	0.49	573.60	2.5	19.1%	2.1
59	2018-10-10	DE0001102457	Bund	0.25%	2028-08-15	10 Y	3,000	R	2,719	880	1,839	2,409.00	97.09	97.10	0.55	591.00	1.1	19.7%	0.9
63	2018-11-07	DE0001102457	Bund	0.25%	2028-08-15	10 Y	3,000	R	3,377	1,421	1,956	2,396.80	98.32	98.33	0.42	603.20	1.4	20.1%	1.1
69	2018-11-28	DE0001102457	Bund	0.25%	2028-08-15	10 Y	2,000	R	2,763	1,305	1,458	1,683.00	99.18	99.18	0.34	317.00	1.6	15.9%	1.4

Appendix C

Weight of each geographical segment on GrandVision's total revenues (2014-2018)

	Revenues segment	Revenues (€ mln)	Revenue weight
2014	G4	1820	64.61%
	Other Europe	732	25.99%
	Americas & Asia	265	9.41%
	Total	2817	
2015	G4	1976	61.65%
	Other Europe	875	27.30%
	Americas & Asia	354	11.05%
	Total	3205	
2016	G4	1969	59.38%
	Other Europe	907	27.35%
	Americas & Asia	440	13.27%
	Total	3316	
2017	G4	1981	57.42%
	Other Europe	990	28.70%
	Americas & Asia	479	13.88%
	Total	3450	
2018	G4	2131	57.28%
	Other Europe	1130	30.38%
	Americas & Asia	459	12.34%
	Total	3720	

Source: GrandVision Annual Reports

Revenues segment	AVG Revenue weight (2014-2018)
G4	60.07%
Other Europe	27.94%
Americas & Asia	11.99%

Appendix D

Country Risk Premium estimation

Revenues segment	Countries	CRP
G4	Austria	0.55%
	Belgium	0.84%
	France	0.69%
	Germany	0.00%
	Ireland	1.18%
	Luxembourg	0.00%
	Middle East	3.39%
	Netherlands	0.00%
	UK	0.69%
	<i>Average</i>	<i>0.82%</i>
Other Europe	Bulgaria	2.64%
	Cyprus	4.17%
	Czech Republic	0.98%
	Denmark	0.00%
	Estonia	0.98%
	Finland	0.55%
	Greece	9.03%
	Hungary	3.06%
	Italy	3.06%
	Malta	1.67%
	Norway	0.00%
	Poland	1.18%
	Portugal	3.06%
	Slovakia	1.18%
	Spain	2.22%
Sweden	0.00%	
Switzerland	0.00%	
	<i>Average</i>	<i>1.99%</i>
Americas & Asia	Argentina	7.64%
	Brazil	4.17%
	Chile	0.98%
	Colombia	2.64%
	India	2.64%
	Mexico	1.67%
	Peru	1.67%
	Russia	3.47%
	Turkey	5.00%
Uruguay	2.64%	
	<i>Average</i>	<i>3.25%</i>

Source: Damodaran (Updated January 1, 2019)

Appendix E

Next 5-Year Inflation Rates estimation

Revenues segment	Countries	Next 5 year (2019-2023) inflation rate	
G4	Austria	2.08%	
	Belgium	1.90%	
	France	1.83%	
	Germany	2.23%	
	Ireland	1.67%	
	Luxembourg	1.94%	
	Netherlands	1.92%	
	UK	2.04%	
	<i>Average</i>	<i>1.95%</i>	
Other Europe	Bulgaria	2.30%	
	Cyprus	1.94%	
	Czech Republic	2.06%	
	Denmark	1.94%	
	Estonia	2.24%	
	Finland	1.90%	
	Greece	1.59%	
	Hungary	3.02%	<i>outlier: not considered</i>
	Italy	1.57%	
	Malta	2.06%	
	Norway	2.00%	
	Poland	2.57%	<i>outlier: not considered</i>
	Portugal	1.91%	
	Spain	1.89%	
Sweden	1.89%		
Switzerland	1.09%		
	<i>Average</i>	<i>1.88%</i>	
Americas & Asia	Argentina	13.84%	<i>outlier: not considered</i>
	Brazil	4.04%	
	Chile	3.01%	
	Colombia	3.10%	
	India	4.36%	
	Mexico	3.13%	
	Peru	2.00%	
	Russia	4.82%	
	Turkey	14.06%	<i>outlier: not considered</i>
	US	2.20%	
	Uruguay	6.40%	
	<i>Average</i>	<i>3.67%</i>	

Source: IMF (Estimates Fall 2018)

Appendix F

Financial Statements FY 2014-2018 Analysis

Financial Statement Analysis	2014	2015	2016	2017	2018
Revenue growth rate		13.77%	3.47%	4.03%	7.86%
EBIT Margin	10.15%	11.03%	11.38%	11.13%	10.06%
NWC/Sales	3.56%	0.42%	-1.98%	2.19%	0.36%
Effective Tax Rate	31.34%	30.84%	27.54%	28.87%	25.60%
PP&E/Sales	14.47%	13.46%	13.38%	14.16%	13.89%
Intangible assets/Sales	15.91%	14.18%	13.44%	17.07%	15.14%
Depreciation/PP&E		26.28%	0.00%	26.27%	25.21%
Amortization/Intangible assets		8.93%	10.14%	11.51%	11.29%

5Y Average	3Y Average	Median	Min	Max
7.28%	5.12%	5.95%	3.47%	13.77%
10.75%	10.86%	11.03%	10.06%	11.38%
0.91%	0.19%	0.42%	-1.98%	3.56%
28.84%	27.34%	28.87%	25.60%	31.34%
13.87%	13.81%	13.89%	13.38%	14.47%
15.15%	15.22%	15.14%	13.44%	17.07%
19.44%	17.16%	25.74%	0.00%	26.28%
10.47%	10.98%	10.72%	8.93%	11.51%

Appendix G

GrandVision's Stock Price Scenario Analysis

Revenue growth rate 2019		EBIT Margin 2019		NWC/Sales		PP&E/Sales	
5.50%	21.21	8.00%	21.24	0.20%	22.12	11.00%	22.58
6.00%	21.51	9.00%	21.55	0.30%	22.11	12.00%	22.41
6.50%	21.81	10.00%	21.85	0.40%	22.09	13.00%	22.24
6.94%	22.09	10.75%	22.09	0.42%	22.09	13.87%	22.09
7.50%	22.44	11.00%	22.16	0.50%	22.07	14.00%	22.07
8.00%	22.75	12.00%	22.47	0.60%	22.06	15.00%	21.89
8.50%	23.07	13.00%	22.78	0.70%	22.04	16.00%	21.72
9.00%	23.39	14.00%	23.09	0.80%	22.02	17.00%	21.55

Long Term Growth Rate		Long Term EBIT Margin		Effective Tax Rate		WACC	
1.50%	18.85	7.00%	14.67	26.00%	23.22	5.00%	36.79
1.75%	20.01	8.00%	17.14	27.00%	22.83	5.50%	30.44
2.00%	21.30	9.00%	19.61	28.00%	22.43	6.00%	25.74
2.14%	22.09	10.00%	22.09	28.87%	22.09	6.51%	22.09
2.30%	23.06	11.00%	24.56	29.00%	22.04	7.00%	19.24
2.45%	24.04	12.00%	27.03	30.00%	21.64	7.50%	16.91
2.60%	25.09	13.00%	29.51	31.00%	21.25	8.00%	14.97
2.75%	26.23	14.00%	31.98	32.00%	20.85	8.50%	13.34

Revenue growth rate 2019	EBIT Margin 2019								
	5.00%	8.00%	9.00%	10.00%	10.75%	11.00%	12.00%	13.00%	14.00%
5.00%	20.08	20.38	20.68	20.91	20.98	21.28	21.58	21.88	22.18
6.00%	20.67	20.98	21.28	21.51	21.59	21.89	22.19	22.50	22.80
6.94%	21.24	21.55	21.85	22.09	22.16	22.47	22.78	23.09	23.40
8.00%	21.88	22.20	22.52	22.75	22.83	23.15	23.46	23.78	24.10
9.00%	22.51	22.83	23.15	23.39	23.47	23.79	24.11	24.43	24.75

Revenue growth rate 2019	Long Term Growth Rate							
	1.50%	1.75%	2.00%	2.14%	2.30%	2.45%	2.60%	2.75%
5.00%	17.84	18.94	20.16	20.91	21.83	22.75	23.75	24.83
6.00%	18.35	19.49	20.75	21.51	22.46	23.41	24.44	25.54
6.94%	18.85	20.01	21.30	22.09	23.06	24.04	25.09	26.23
8.00%	19.41	20.61	21.94	22.76	23.75	24.76	25.85	27.02
9.00%	19.96	21.19	22.56	23.40	24.42	25.46	26.58	27.78

EBIT Margin 2019	Long Term EBIT Margin								
	7.00%	8.00%	9.00%	10.00%	10.75%	11.00%	12.00%	13.00%	14.00%
9.00%	14.13	16.60	19.07	21.55	24.02	26.49	28.97	31.44	33.91
10.00%	14.43	16.91	19.38	21.85	24.33	26.80	29.27	31.75	34.22
10.75%	14.67	17.14	19.61	22.09	24.56	27.03	29.51	31.98	34.45
11.00%	14.74	17.22	19.69	22.16	24.64	27.11	29.58	32.06	34.53
12.00%	15.05	17.53	20.00	22.47	24.95	27.42	29.89	32.37	34.84

Long Term Growth Rate	Long Term EBIT Margin								
	7.00%	8.00%	9.00%	10.00%	10.75%	11.00%	12.00%	13.00%	14.00%
1.75%	13.22	15.48	17.75	20.01	22.27	24.54	26.80	29.06	31.32
2.00%	14.12	16.51	18.91	21.30	23.70	26.09	28.48	30.88	33.17
2.14%	14.67	17.14	19.62	22.09	24.57	27.04	29.51	31.99	34.46
2.30%	15.35	17.92	20.49	23.06	25.63	28.20	30.78	33.35	35.72
2.60%	16.76	19.54	22.32	25.09	27.87	30.65	33.42	36.20	38.57

Long Term Growth Rate	WACC							
	5.00%	5.50%	6.00%	6.51%	7.00%	7.50%	8.00%	8.50%
1.75%	31.99	26.94	23.08	20.01	17.58	15.54	13.84	12.39
2.00%	34.93	29.10	24.73	21.30	18.62	16.40	14.55	12.99
2.14%	36.81	30.45	25.75	22.09	19.25	16.91	14.97	13.34
2.30%	39.19	32.15	27.01	23.06	20.02	17.53	15.49	13.77
2.60%	44.53	35.83	29.69	25.09	21.61	18.81	16.53	14.64

Assumptions	Base Scenario	Worst Scenario	Best Scenario
Revenue growth rate 2019	6.94%	6.54%	7.34%
EBIT Margin 2019	10.75%	9.14%	12.36%
Long Term EBIT Margin	10.00%	8.50%	11.50%
NWC/Sales	0.42%	0.48%	0.35%
Effective Tax Rate	28.87%	30.32%	27.43%
Long term growth rate	2.14%	1.93%	2.35%
Stock Price	22.09	16.23	28.80
Potential Price Change	8.06%	-20.60%	40.90%

Appendix H

GrandVision's Comparables Revenues 2014-2018

Revenue	2014	2015	2016	2017	2018
Fielmann AG	1,226.49	1,299.94	1,337.18	1,385.97	1,428.00
New Look Vision Group Inc	95.70	123.32	135.49	156.60	190.41
National Vision Holdings Inc	703.63	958.31	1,081.44	1,219.99	1,302.67
Jins Holdings Inc	261.45	297.18	368.53	416.11	417.39
GrandVision	2,816.99	3,204.89	3,316.08	3,449.86	3,720.98

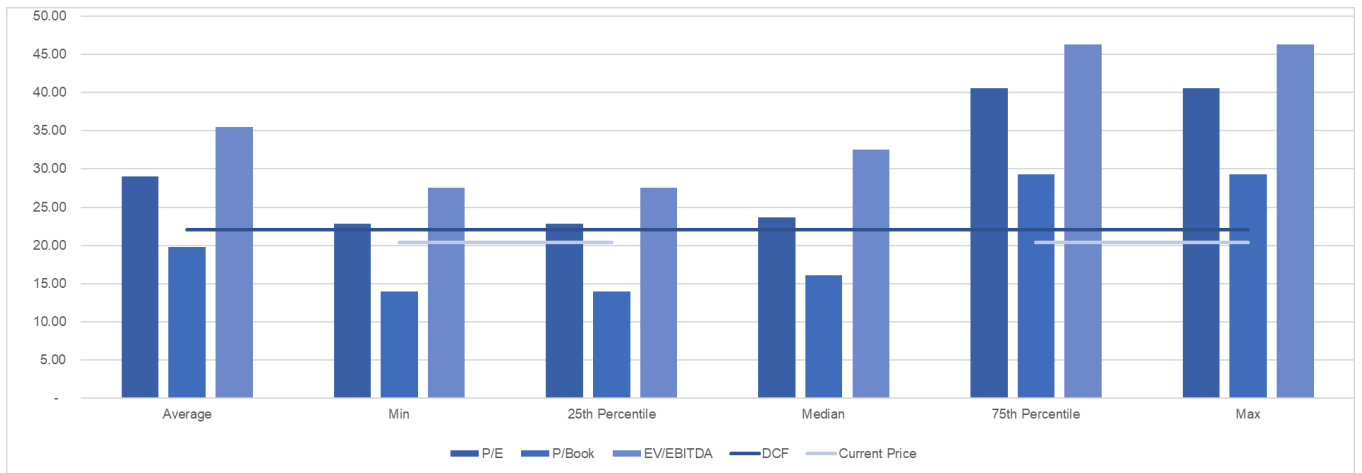
Source: Refinitiv

Appendix I

Multiple Valuation

GrandVision Financials (2018)		
Earnings	Equity Book	EBITDA
216.28	1,162.45	563.99

GrandVision Multiple Valuation	EQ (P/E)	EQ (P/Book)	EV (EV/EBITDA)
Average	7,367.94	5,025.66	8,995.64
Min	5,807.12	3,545.47	6,993.48
25th Percentile	5,807.12	3,545.47	6,993.48
Median	5,997.44	4,091.82	8,251.17
75th Percentile	10,299.25	7,439.68	11,742.27
Max	10,299.25	7,439.68	11,742.27



Appendix J

Combined firm: Most-likely Scenario

Most-likely Scenario

Combined firm

	2019	2020	2021	2022	2023
Revenue	20.659	21.257	21.795	22.372	22.831
Cost	17.319	17.705	18.070	18.477	18.856

Buyer (as combined)

Revenue	16.680	17.019	17.321	17.717	18.032
COGS	6.211	6.306	6.402	6.516	6.631
SG&A	7.720	7.818	7.917	8.057	8.200

Seller (as combined)

Visits per year	271	306	346	390	439
ARPV (€)	15	14	13	12	11
Revenue	3.979	4.238	4.473	4.655	4.799
COGS	1.072	1.139	1.199	1.247	1.286
SG&A	2.317	2.443	2.553	2.656	2.739

Synergies

	2019	2020	2021	2022	2023	Terminal Period
Cash inflows						
Revenue-enhancing	▲	64	88	178	182	2.703
Cost-reducing	▲	65	132	135	137	
Change in operating income	-	128	220	313	320	2.703
PV	-	112	181	241	231	1.951
Cash outflows						
Integration costs	180	45	45	45	45	45
PV	169	40	37	35	33	33
NPV	-	169	73	144	206	198

Synergy

Synergy	Type	Affects	Full potential	Years to realise
Vertical integration (buyer)	Revenue-enhancing	Revenues, buyer	0,5%	3
Vertical integration (buyer)	Revenue-enhancing	Visits per year, seller	0,5%	2
Increased market power in Europe (buyer)	Revenue-enhancing	Revenues, buyer	0,3%	3
Access to critical resources and know-how (seller)	Revenue-enhancing	ARPV, Seller	0,5%	2
Supply chain optimisation and sourcing savings (buyer)	Cost-reducing	COGS, buyer	0,5%	2
Supply chain optimisation and sourcing savings (seller)	Cost-reducing	COGS, seller	0,5%	2
G&A rationalization (buyer)	Cost-reducing	SG&A, buyer	1,0%	2
G&A rationalization (seller)	Cost-reducing	SG&A, seller	1,0%	2

Appendix K

Combined firm: Optimistic Scenario

Optimistic Scenario

Combined firm

	2019	2020	2021	2022	2023
Revenue	20.659	21.293	21.854	22.463	22.924
Cost	17.319	17.641	17.938	18.342	18.719

Buyer (as combined)

Revenue	16.680	17.033	17.336	17.762	18.077
COGS	6.211	6.290	6.370	6.463	6.598
SG&A	7.720	7.778	7.837	7.976	8.118

Seller (as combined)

Visits per year	271	307	347	392	441
ARPV (€)	15	14	13	12	11
Revenue	3.979	4.259	4.518	4.701	4.847

COGS	1.072	1.141	1.205	1.254	1.292
SG&A	2.317	2.431	2.527	2.630	2.711

Synergies

	2019	2020	2021	2022	2023 Terminal Period
Cash inflows					4.081
Revenue-enhancing	▲	99	147	269	275
Cost-reducing	▲	129	264	270	275
Change in operating income	-	228	411	538	550
PV	-	200	338	415	397
Cash outflows					
Integration costs	180	45	45	45	45
PV	169	40	37	35	33
NPV	-	169	161	301	364

Synergy	Type	Affects	Full potential	Years to realise
Vertical integration (buyer)	Revenue-enhancing	Revenues, buyer	0,5%	3
Vertical integration (buyer)	Revenue-enhancing	Visits per year, seller	1,0%	2
Increased market power in Europe (buyer)	Revenue-enhancing	Revenues, buyer	0,5%	3
Access to critical resources and know-how (seller)	Revenue-enhancing	ARPV, Seller	1,0%	2
Supply chain optimisation and sourcing savings (buyer)	Cost-reducing	COGS, buyer	1,0%	2
Supply chain optimisation and sourcing savings (seller)	Cost-reducing	COGS, seller	1,0%	2
G&A rationalization (buyer)	Cost-reducing	SG&A, buyer	2,0%	2
G&A rationalization (seller)	Cost-reducing	SG&A, seller	2,0%	2

Appendix L

Combined firm: Pessimistic Scenario

Pessimistic Scenario

Combined firm	2019	2020	2021	2022	2023
Revenue	20.659	21.194	21.707	22.194	22.649
Cost	17.319	17.754	18.170	18.579	18.961
Buyer (as combined)					
Revenue	16.680	16.977	17.278	17.585	17.898
COGS	6.211	6.306	6.402	6.516	6.631
SG&A	7.720	7.857	7.997	8.139	8.283
Seller (as combined)					
Visits per year	271	305	344	388	437
ARPV (€)	15	14	13	12	11
Revenue	3.979	4.217	4.429	4.609	4.752
COGS	1.072	1.136	1.193	1.241	1.280
SG&A	2.317	2.455	2.578	2.683	2.766

Synergies

	2019	2020	2021	2022	2023
Cash inflows					
Revenue-enhancing	▲	-	-	-	-
Cost-reducing	▲	16	32	33	33
Change in operating income		16	32	33	33
PV		14	26	25	24
Cash outflows					
Integration costs	180	45	45	45	45
PV	169	40	37	35	33
NPV	-	169	26	10	8

Synergy	Type	Affects	Full potential	Years to realise
Vertical integration (buyer)	Revenue-enhancing	Revenues, buyer	0,0%	N/A
Vertical integration (buyer)	Revenue-enhancing	Visits per year, seller	0,0%	N/A
Increased market power in Europe (buyer)	Revenue-enhancing	Revenues, buyer	0,0%	N/A
Access to critical resources and know-how (seller)	Revenue-enhancing	ARPV, Seller	0,0%	N/A
Supply chain optimisation and sourcing savings (buyer)	Cost-reducing	COGS, buyer	0,5%	2
Supply chain optimisation and sourcing savings (seller)	Cost-reducing	COGS, seller	0,0%	N/A
G&A rationalization (buyer)	Cost-reducing	SG&A, buyer	0,0%	N/A
G&A rationalization (seller)	Cost-reducing	SG&A, seller	0,0%	N/A

Appendix M

Volatility: Comparables' Stock Prices

Price		Price		Price		Price		Price		Price	
Exchange Date	Carl Zeiss Meditec AG	Exchange Date	Hoya Corp	Exchange Date	Cooper Companies Inc	Exchange Date	STAAR Surgical Co	Exchange Date	Safilo Group SpA	Exchange Date	Fielmann Group AG
02-giu-2014	21,70	02-giu-2014	23,20	02-giu-2014	96,43	02-giu-2014	10,99	02-giu-2014	9,52	02-giu-2014	53,50
03-giu-2014	21,50	03-giu-2014	23,33	03-giu-2014	96,12	03-giu-2014	10,85	03-giu-2014	9,30	03-giu-2014	51,98
04-giu-2014	21,30	04-giu-2014	23,06	04-giu-2014	96,39	04-giu-2014	10,83	04-giu-2014	9,37	04-giu-2014	51,78
05-giu-2014	21,39	05-giu-2014	23,76	05-giu-2014	95,99	05-giu-2014	11,30	05-giu-2014	9,48	05-giu-2014	51,75
06-giu-2014	21,36	06-giu-2014	23,77	06-giu-2014	97,76	06-giu-2014	11,36	06-giu-2014	9,42	06-giu-2014	52,00
09-giu-2014	21,35	09-giu-2014	23,49	09-giu-2014	97,98	09-giu-2014	11,57	09-giu-2014	9,46	09-giu-2014	52,33
10-giu-2014	21,35	10-giu-2014	23,60	10-giu-2014	97,95	10-giu-2014	11,81	10-giu-2014	9,25	10-giu-2014	52,48
11-giu-2014	21,30	11-giu-2014	23,72	11-giu-2014	98,31	11-giu-2014	12,11	11-giu-2014	9,17	11-giu-2014	52,50
12-giu-2014	21,45	12-giu-2014	23,56	12-giu-2014	97,00	12-giu-2014	11,90	12-giu-2014	9,05	12-giu-2014	52,50
13-giu-2014	21,48	13-giu-2014	23,47	13-giu-2014	96,47	13-giu-2014	11,66	13-giu-2014	8,73	13-giu-2014	51,60
16-giu-2014	21,36	16-giu-2014	23,59	16-giu-2014	97,30	16-giu-2014	11,95	16-giu-2014	8,59	16-giu-2014	51,18
17-giu-2014	21,43	17-giu-2014	23,69	17-giu-2014	99,87	17-giu-2014	11,93	17-giu-2014	8,67	17-giu-2014	51,93
18-giu-2014	21,32	18-giu-2014	24,48	18-giu-2014	99,25	18-giu-2014	12,17	18-giu-2014	8,67	18-giu-2014	52,15
19-giu-2014	21,24	19-giu-2014	24,53	19-giu-2014	99,96	19-giu-2014	12,60	19-giu-2014	8,89	19-giu-2014	52,15
20-giu-2014	20,69	20-giu-2014	24,83	20-giu-2014	100,88	20-giu-2014	12,41	20-giu-2014	8,95	20-giu-2014	52,25
23-giu-2014	20,73	23-giu-2014	24,67	23-giu-2014	100,35	23-giu-2014	12,15	23-giu-2014	9,04	23-giu-2014	52,38
24-giu-2014	21,14	24-giu-2014	24,70	24-giu-2014	99,22	24-giu-2014	11,94	24-giu-2014	8,98	24-giu-2014	52,10
25-giu-2014	20,98	25-giu-2014	24,40	25-giu-2014	100,42	25-giu-2014	11,99	25-giu-2014	8,96	25-giu-2014	51,88
26-giu-2014	21,03	26-giu-2014	24,48	26-giu-2014	99,65	26-giu-2014	12,09	26-giu-2014	9,12	26-giu-2014	52,53
27-giu-2014	21,05	27-giu-2014	24,21	27-giu-2014	100,42	27-giu-2014	12,23	27-giu-2014	8,86	27-giu-2014	53,00
30-giu-2014	22,40	30-giu-2014	24,27	30-giu-2014	98,99	30-giu-2014	12,27	30-giu-2014	8,89	30-giu-2014	52,68
01-lug-2014	22,19	01-lug-2014	24,70	01-lug-2014	107,43	01-lug-2014	10,90	01-lug-2014	9,01	01-lug-2014	53,43
02-lug-2014	22,35	02-lug-2014	24,70	02-lug-2014	107,37	02-lug-2014	10,14	02-lug-2014	9,06	02-lug-2014	53,08
03-lug-2014	22,69	03-lug-2014	24,57	03-lug-2014	106,77	03-lug-2014	10,40	03-lug-2014	9,07	03-lug-2014	51,78
04-lug-2014	23,05	04-lug-2014	24,67	04-lug-2014	106,34	04-lug-2014	10,12	04-lug-2014	9,07	04-lug-2014	51,13
07-lug-2014	23,40	07-lug-2014	24,63	07-lug-2014	108,72	07-lug-2014	9,33	07-lug-2014	9,33	07-lug-2014	49,57
08-lug-2014	23,19	08-lug-2014	24,68	08-lug-2014	109,60	08-lug-2014	9,53	08-lug-2014	8,99	08-lug-2014	49,86
09-lug-2014	23,26	09-lug-2014	24,46	09-lug-2014	109,36	09-lug-2014	9,02	09-lug-2014	8,60	09-lug-2014	49,77
10-lug-2014	23,18	10-lug-2014	24,36	10-lug-2014	110,38	10-lug-2014	9,31	10-lug-2014	8,59	10-lug-2014	49,25
11-lug-2014	23,15	11-lug-2014	24,28	11-lug-2014	110,43	11-lug-2014	9,39	11-lug-2014	8,35	11-lug-2014	49,12
14-lug-2014	23,06	14-lug-2014	24,66	14-lug-2014	111,11	14-lug-2014	9,23	14-lug-2014	8,42	14-lug-2014	49,29
15-lug-2014	22,90	15-lug-2014	24,64	15-lug-2014	111,71	15-lug-2014	9,38	15-lug-2014	8,39	15-lug-2014	48,99
16-lug-2014	22,88	16-lug-2014	24,87	16-lug-2014	109,98	16-lug-2014	9,37	16-lug-2014	8,44	16-lug-2014	49,75
17-lug-2014	23,00	17-lug-2014	25,13	17-lug-2014	111,65	17-lug-2014	9,61	17-lug-2014	8,31	17-lug-2014	49,87
18-lug-2014	22,51	18-lug-2014	24,73	18-lug-2014	112,50	18-lug-2014	9,66	18-lug-2014	8,43	18-lug-2014	49,46
21-lug-2014	22,58	22-lug-2014	25,08	22-lug-2014	114,82	22-lug-2014	9,70	22-lug-2014	8,44	22-lug-2014	48,94
22-lug-2014	22,67	23-lug-2014	25,06	23-lug-2014	115,87	23-lug-2014	9,53	23-lug-2014	8,59	23-lug-2014	49,50
23-lug-2014	22,60	24-lug-2014	24,76	24-lug-2014	119,48	24-lug-2014	9,38	23-lug-2014	8,62	23-lug-2014	49,43
24-lug-2014	22,65	25-lug-2014	25,16	25-lug-2014	119,12	25-lug-2014	9,51	24-lug-2014	8,69	24-lug-2014	49,00
25-lug-2014	22,57	28-lug-2014	24,82	28-lug-2014	118,81	28-lug-2014	9,36	25-lug-2014	8,63	25-lug-2014	48,29
28-lug-2014	22,52	29-lug-2014	24,69	29-lug-2014	119,66	29-lug-2014	9,75	28-lug-2014	8,71	28-lug-2014	47,89
29-lug-2014	22,65	30-lug-2014	24,87	30-lug-2014	121,77	30-lug-2014	10,11	29-lug-2014	8,77	29-lug-2014	47,69
30-lug-2014	22,74	31-lug-2014	24,50	31-lug-2014	120,17	31-lug-2014	9,61	30-lug-2014	8,86	30-lug-2014	47,83
31-lug-2014	22,20	01-ago-2014	24,61	01-ago-2014	119,07	01-ago-2014	8,09	31-lug-2014	8,70	31-lug-2014	47,21
01-ago-2014	22,10	04-ago-2014	24,47	04-ago-2014	118,81	04-ago-2014	8,21	01-ago-2014	8,47	01-ago-2014	46,54
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14-ago-2014	22,75	15-ago-2014	24,87	15-ago-2014	119,91	15-ago-2014	8,67	14-ago-2014	8,64	14-ago-2014	48,05
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25-ago-2014	23,50	26-ago-2014	24,66	26-ago-2014	123,51	26-ago-2014	8,74	25-ago-2014	8,78	25-ago-2014	50,50
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01-set-2014	23,48	02-set-2014	24,75	03-set-2014	123,65	03-set-2014	8,71	02-set-2014	8,91	02-set-2014	49,34
02-set-2014	23,61	03-set-2014	24,90	04-set-2014	124,34	04-set-2014	8,71	03-set-2014	8,64	03-set-2014	49,85
03-set-2014	23,50	04-set-2014	25,23	05-set-2014	125,42	05-set-2014	8,83	04-set-2014	8,62	04-set-2014	49,52
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09-set-2014	23,10	10-set-2014	25,23	11-set-2014	124,82	11-set-2014	9,08	10-set-2014	8,74	09-set-2014	50,49
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23-set-2014	23,68	26-set-2014	26,90	25-set-2014	123,94	25-set-2014	8,92	24-set-2014	8,32	23-set-2014	49,34
24-set-2014	23,66										

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02-dic-2014	21,94	09-dic-2014	28,23	04-dic-2014	136,36	04-dic-2014	7,16	02-dic-2014	5,62	02-dic-2014	54,45
03-dic-2014	21,85	10-dic-2014	33,07	05-dic-2014	131,87	05-dic-2014	7,59	03-dic-2014	5,79	03-dic-2014	54,44
04-dic-2014	21,65	11-dic-2014	27,66	06-dic-2014	131,82	06-dic-2014	7,38	04-dic-2014	5,74	04-dic-2014	54,47
05-dic-2014	21,50	12-dic-2014	27,56	07-dic-2014	131,15	07-dic-2014	7,52	05-dic-2014	5,80	05-dic-2014	54,94
06-dic-2014	20,50	15-dic-2014	27,61	10-dic-2014	127,28	10-dic-2014	7,17	08-dic-2014	5,80	08-dic-2014	55,06
08-dic-2014	20,50	16-dic-2014	27,00	11-dic-2014	128,15	11-dic-2014	7,37	09-dic-2014	5,67	09-dic-2014	53,94
10-dic-2014	20,55	17-dic-2014	27,13	12-dic-2014	127,01	12-dic-2014	7,32	10-dic-2014	5,70	10-dic-2014	54,97
11-dic-2014	20,55	18-dic-2014	27,03	15-dic-2014	125,42	15-dic-2014	7,20	11-dic-2014	5,73	11-dic-2014	55,60
12-dic-2014	20,32	16-dic-2014	27,68	12-dic-2014	123,87	12-dic-2014	7,36	12-dic-2014	5,74	12-dic-2014	54,98
15-dic-2014	19,88	22-dic-2014	28,43	17-dic-2014	129,33	17-dic-2014	7,54	15-dic-2014	5,76	15-dic-2014	54,54
16-dic-2014	20,10	24-dic-2014	28,50	18-dic-2014	132,10	18-dic-2014	7,51	16-dic-2014	5,87	16-dic-2014	55,21
17-dic-2014	20,27	25-dic-2014	28,61	19-dic-2014	133,22	19-dic-2014	7,44	17-dic-2014	5,84	17-dic-2014	54,43
18-dic-2014	20,33	26-dic-2014	28,79	22-dic-2014	133,76	22-dic-2014	7,62	18-dic-2014	5,98	18-dic-2014	56,21
19-dic-2014	20,55	29-dic-2014	28,73	23-dic-2014	134,09	23-dic-2014	7,55	19-dic-2014	5,86	19-dic-2014	55,83
22-dic-2014	21,43	30-dic-2014	28,27	24-dic-2014	134,66	24-dic-2014	7,47	22-dic-2014	5,84	22-dic-2014	56,64
23-dic-2014	21,44	05-gen-2015	28,40	26-dic-2014	134,70	26-dic-2014	7,54	23-dic-2014	5,95	23-dic-2014	56,85
29-dic-2014	21,72	06-gen-2015	27,98	29-dic-2014	135,63	29-dic-2014	7,53	29-dic-2014	5,84	29-dic-2014	56,59
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02-gen-2015	21,32	08-gen-2015	28,11	31-dic-2014	133,99	31-dic-2014	7,53	02-gen-2015	6,10	02-gen-2015	55,96
05-gen-2015	21,14	09-gen-2015	28,65	02-gen-2015	133,84	02-gen-2015	7,52	05-gen-2015	5,92	05-gen-2015	56,34
06-gen-2015	21,43	13-gen-2015	29,32	05-gen-2015	133,38	05-gen-2015	7,62	06-gen-2015	5,79	06-gen-2015	55,95
07-gen-2015	21,19	14-gen-2015	29,33	06-gen-2015	132,17	06-gen-2015	7,30	07-gen-2015	5,86	07-gen-2015	56,22
08-gen-2015	21,46	15-gen-2015	30,21	07-gen-2015	137,05	07-gen-2015	7,60	08-gen-2015	5,98	08-gen-2015	57,30
09-gen-2015	21,71	16-gen-2015	29,74	08-gen-2015	138,13	08-gen-2015	7,57	09-gen-2015	5,83	09-gen-2015	57,15
12-gen-2015	21,87	19-gen-2015	30,45	09-gen-2015	136,72	09-gen-2015	7,50	12-gen-2015	6,22	12-gen-2015	57,72
13-gen-2015	22,19	20-gen-2015	30,95	12-gen-2015	136,15	12-gen-2015	7,21	13-gen-2015	6,36	13-gen-2015	57,93
14-gen-2015	22,19	21-gen-2015	30,52	13-gen-2015	136,87	13-gen-2015	7,32	14-gen-2015	6,47	14-gen-2015	58,73
15-gen-2015	22,19	22-gen-2015	30,63	14-gen-2015	136,27	14-gen-2015	7,22	15-gen-2015	6,45	15-gen-2015	59,51
16-gen-2015	22,70	23-gen-2015	32,12	15-gen-2015	137,33	15-gen-2015	6,78	16-gen-2015	6,43	16-gen-2015	59,48
19-gen-2015	23,53	26-gen-2015	32,29	16-gen-2015	138,11	16-gen-2015	6,35	19-gen-2015	6,55	19-gen-2015	60,00
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21-gen-2015	22,85	28-gen-2015	33,63	21-gen-2015	140,15	21-gen-2015	6,18	21-gen-2015	6,53	21-gen-2015	60,03
22-gen-2015	22,50	29-gen-2015	33,91	22-gen-2015	144,39	22-gen-2015	6,31	22-gen-2015	6,67	22-gen-2015	59,53
23-gen-2015	22,56	30-gen-2015	34,70	23-gen-2015	144,33	23-gen-2015	6,40	23-gen-2015	6,64	23-gen-2015	61,32
26-gen-2015	22,96	02-feb-2015	35,00	26-gen-2015	144,35	26-gen-2015	6,55	26-gen-2015	7,08	26-gen-2015	62,18
27-gen-2015	22,66	03-feb-2015	33,20	27-gen-2015	142,85	27-gen-2015	6,08	27-gen-2015	6,98	27-gen-2015	61,46
29-gen-2015	24,19	04-feb-2015	36,16	29-gen-2015	141,84	29-gen-2015	6,78	29-gen-2015	6,95	29-gen-2015	62,11
29-gen-2015	22,90	05-feb-2015	33,69	29-gen-2015	141,44	29-gen-2015	6,18	29-gen-2015	6,89	29-gen-2015	61,85
30-gen-2015	23,36	06-feb-2015	33,43	30-gen-2015	139,69	30-gen-2015	5,32	30-gen-2015	7,05	30-gen-2015	60,31
02-feb-2015	23,18	09-feb-2015	33,43	02-feb-2015	139,17	02-feb-2015	5,69	02-feb-2015	7,20	02-feb-2015	60,16
03-feb-2015	23,99	10-feb-2015	33,55	03-feb-2015	137,50	03-feb-2015	5,62	03-feb-2015	7,37	03-feb-2015	59,22
04-feb-2015	24,81	12-feb-2015	34,49	04-feb-2015	141,04	04-feb-2015	6,03	04-feb-2015	7,31	04-feb-2015	60,03
05-feb-2015	24,50	13-feb-2015	34,45	05-feb-2015	140,77	05-feb-2015	5,93	05-feb-2015	7,36	05-feb-2015	60,78
06-feb-2015	23,90	16-feb-2015	34,68	06-feb-2015	142,56	06-feb-2015	6,72	06-feb-2015	7,24	06-feb-2015	59,27
09-feb-2015	23,56	17-feb-2015	34,35	09-feb-2015	140,27	09-feb-2015	6,57	09-feb-2015	7,07	09-feb-2015	58,54
10-feb-2015	23,83	18-feb-2015	35,80	10-feb-2015	143,03	10-feb-2015	6,55	10-feb-2015	7,08	10-feb-2015	58,64
11-feb-2015	24,16	19-feb-2015	35,46	11-feb-2015	142,93	11-feb-2015	6,07	11-feb-2015	6,98	11-feb-2015	58,88
12-feb-2015	24,83	20-feb-2015	35,65	12-feb-2015	142,98	12-feb-2015	5,95	12-feb-2015	7,17	12-feb-2015	59,73
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16-feb-2015	24,98	24-feb-2015	35,95	17-feb-2015	143,12	17-feb-2015	5,84	16-feb-2015	7,25	16-feb-2015	58,03
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18-feb-2015	24,81	26-feb-2015	36,38	19-feb-2015	144,60	19-feb-2015	5,93	18-feb-2015	7,22	18-feb-2015	60,68
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20-feb-2015	24,60	02-mar-2015	36,07	23-feb-2015	145,65	23-feb-2015	5,63	20-feb-2015	7,35	20-feb-2015	59,91
23-feb-2015	24,55	03-mar-2015	36,39	24-feb-2015	145,01	24-feb-2015	6,35	23-feb-2015	7,63	23-feb-2015	60,83
24-feb-2015	24,60	04-mar-2015	36,21	25-feb-2015	143,88	25-feb-2015	6,40	24-feb-2015	7,80	24-feb-2015	60,83
25-feb-2015	24,72	05-mar-2015	36,49	26-feb-2015	147,78	26-feb-2015	6,58	25-feb-2015	7,70	25-feb-2015	60,68
26-feb-2015	24,55	06-mar-2015	38,92	27-feb-2015	146,49	27-feb-2015	6,13	26-feb-2015	7,79	26-feb-2015	61,18
27-feb-2015	24,57	09-mar-2015	38,11	02-mar-2015	148,20	02-mar-2015	6,10	27-feb-2015	7,72	27-feb-2015	61,89
02-mar-2015	24,50	10-mar-2015	38,47	03-mar-2015	147,46	03-mar-2015	6,94	02-mar-2015	7,76	02-mar-2015	62,11
03-mar-2015	24,02	11-mar-2015	38,97	04-mar-2015	148,23	04-mar-2015	6,60	03-mar-2015	7,63	03-mar-2015	62,18
04-mar-2015	24,15	12-mar-2015	39,23	05-mar-2015	148,85	05-mar-2015	6,87	04-mar-2015	7,49	04-mar-2015	62,24
05-mar-2015	24,12	13-mar-2015	39,85	06-mar-2015	166,24	06-mar-2015	6,71	05-mar-2015	7,65	05-mar-2015	62,57
06-mar-2015	24,09	16-mar-2015	39,89	09-mar-2015	169,08	09-mar-2015	6,65	06-mar-2015	7,50	06-mar-2015	62,65
09-mar-2015	24,15	17-mar-2015	40,27	10-mar-2015	170,37	10-mar-2015	7,07	09-mar-2015	7,23	09-mar-2015	62,03
10-mar-2015	24,08	18-mar-2015	39,98	11-mar-2015	175,85	11-mar-2015	6,78	10-mar-2015	7,33	10-mar-2015	61,76
11-mar-2015	24,31	19-mar-2015	39,79	12-mar-2015	174,00	12-mar-2015	6,39	11-mar-2015	7,31	11-mar-2015	62,71
12-mar-2015	25,15	20-mar-2015	39,64	13-mar-2015	177,11	13-mar-2015	6,75	12-mar-2015	7,39	12-mar-2015	62,90
13-mar-2015	25,22	23-mar-2015	39,76	16-mar-2015	178,07	16-mar-2015	6,82	13-mar-2015	7,46	13-mar-2015	63,00
16-mar-2015	25,40	24-mar-2015	39,33	17-mar-2015	177,16	17-mar-2015	6,79	16-mar-2015	8,04	16-mar-2015	64,38
17-mar-2015	25,22	25-mar-2015	39,99	18-mar-2015	179,42	18-mar-2015	6,59	17-mar-2015	7,82	17-mar-2015	63,52
18-mar-2015	24,79	26-mar-2015	39,90	19-mar-2015	175,78	19-mar-2015	6,89	18-mar-2015	7,73	18-mar-2015	62,77
19-mar-2015	24,73	27-mar-2015	38,97	20-mar-2015	173,23	20-mar-2015	6,83	19-mar-2015	7,79	19-mar-2015	62,88
20-mar-2015	25,00	30-mar-2015	37,77	23-mar-2015	168,29	23-mar-2015	6,82	20-mar-2015	7,85	20-mar-2015	63,49
23-mar-2015	24,35	31-mar-2015	37,38	24-mar-2015	168,32	24-mar-2015	6,67	23-mar-2015	7,82	23-mar-2015	62,98
24-mar-2015	24,36	01-apr-2015	37,34	25-mar-2015	168,12	25-mar-2015	6,62	24-mar-2015	7,62	24-mar-2015	63,44
25-mar-2015	24,19	02-apr-2015	37,63	26-mar-2015	170,07	26-mar-2015	6,66	25-mar-2015	7,69	25-mar-2015	63,71
26-mar-2015	23,97	03-apr-2015	37,37	27-mar-2015	171,00	27-mar-2015	6,78	26-mar-2015	7,63	26-mar-2015	62,23
27-mar-2015	24,13	06-apr-2015	37,58	30-mar-2015	174,57	30-mar-2015	6,93	27-mar-2015	7,85	27-mar-2015	62,69
30-mar-2015	24,65	07-apr-2015	38,04	31-mar-2015	174,67	31-mar-2015	6,92	30-mar-2015	8,14	30-mar-2015	62,86
31-mar-2015	24,35	08-apr-2015	37,91	01-apr-2015	173,38	01-apr-2015	6,80	31-mar-2015	8,16	31-mar-2015	62,42
01-apr-2015	24,15	09-apr-2015	38,96	02-apr-2015	172,50	02-apr-2015	6,85	01-apr-2015	8,05	01-apr-2015	63,35
02-apr-2015	24,61	10-apr-2015	38,50	06-apr-2015	172,49	06-apr-2015	6,68	02-apr-2015	8,10	02-apr-2015	64,01
07-apr-2015	25,13	13-apr-2015	38,95	07-apr-2015	171,14	07-apr-2015	6,80	07-apr-2015	8,14	07-apr-2015	64,62
08-apr-2015	24										

01-lug-2015	24,09	09-lug-2015	35,86	30-giu-2015	159,83	30-giu-2015	8,68	30-giu-2015	7,21	01-lug-2015	61,81
02-lug-2015	24,06	10-lug-2015	34,99	01-lug-2015	159,39	01-lug-2015	8,53	01-lug-2015	7,28	02-lug-2015	61,59
03-lug-2015	24,20	13-lug-2015	36,11	02-lug-2015	159,33	02-lug-2015	8,45	02-lug-2015	7,14	03-lug-2015	61,17
06-lug-2015	24,08	14-lug-2015	35,72	06-lug-2015	159,64	06-lug-2015	8,31	03-lug-2015	7,12	06-lug-2015	61,75
07-lug-2015	23,85	15-lug-2015	36,92	07-lug-2015	161,25	07-lug-2015	8,27	06-lug-2015	6,97	07-lug-2015	61,29
08-lug-2015	23,28	16-lug-2015	37,58	08-lug-2015	157,02	08-lug-2015	8,41	07-lug-2015	6,70	08-lug-2015	60,07
09-lug-2015	23,67	17-lug-2015	37,58	09-lug-2015	158,28	09-lug-2015	8,35	08-lug-2015	6,60	09-lug-2015	61,04
10-lug-2015	24,11	21-lug-2015	37,01	10-lug-2015	157,79	10-lug-2015	8,07	09-lug-2015	6,84	10-lug-2015	60,92
13-lug-2015	24,28	22-lug-2015	36,92	13-lug-2015	161,97	13-lug-2015	8,25	10-lug-2015	6,98	13-lug-2015	60,23
14-lug-2015	24,57	23-lug-2015	36,61	14-lug-2015	163,21	14-lug-2015	8,70	13-lug-2015	7,07	14-lug-2015	60,82
15-lug-2015	24,77	24-lug-2015	36,17	15-lug-2015	160,13	15-lug-2015	8,63	14-lug-2015	7,04	15-lug-2015	60,72
16-lug-2015	25,16	27-lug-2015	35,61	16-lug-2015	162,47	16-lug-2015	8,70	15-lug-2015	7,18	16-lug-2015	61,32
17-lug-2015	25,22	28-lug-2015	35,55	17-lug-2015	160,76	17-lug-2015	8,88	16-lug-2015	7,14	17-lug-2015	61,13
20-lug-2015	25,49	29-lug-2015	37,29	20-lug-2015	162,98	20-lug-2015	8,57	17-lug-2015	7,09	20-lug-2015	61,50
21-lug-2015	25,20	30-lug-2015	37,81	21-lug-2015	158,79	21-lug-2015	8,50	20-lug-2015	6,96	21-lug-2015	60,95
22-lug-2015	24,93	31-lug-2015	38,55	22-lug-2015	157,78	22-lug-2015	8,52	21-lug-2015	6,74	22-lug-2015	60,34
23-lug-2015	24,84	03-ago-2015	38,77	23-lug-2015	158,19	23-lug-2015	8,41	22-lug-2015	6,75	23-lug-2015	59,94
24-lug-2015	25,45	04-ago-2015	39,00	24-lug-2015	157,89	24-lug-2015	8,08	23-lug-2015	6,75	24-lug-2015	59,64
27-lug-2015	24,54	05-ago-2015	38,71	27-lug-2015	154,95	27-lug-2015	7,79	24-lug-2015	6,48	27-lug-2015	58,68
28-lug-2015	24,94	06-ago-2015	38,90	28-lug-2015	158,44	28-lug-2015	8,09	27-lug-2015	6,31	28-lug-2015	59,24
29-lug-2015	25,03	07-ago-2015	39,08	29-lug-2015	160,62	29-lug-2015	8,09	28-lug-2015	6,36	29-lug-2015	59,36
30-lug-2015	25,12	10-ago-2015	38,95	30-lug-2015	161,47	30-lug-2015	8,29	29-lug-2015	6,37	30-lug-2015	59,63
31-lug-2015	25,63	11-ago-2015	38,66	31-lug-2015	161,10	31-lug-2015	7,98	30-lug-2015	6,42	31-lug-2015	60,20
03-ago-2015	26,21	12-ago-2015	37,51	03-ago-2015	161,80	03-ago-2015	7,48	31-lug-2015	6,44	03-ago-2015	60,79
04-ago-2015	25,90	13-ago-2015	37,22	04-ago-2015	161,74	04-ago-2015	7,44	03-ago-2015	6,47	04-ago-2015	61,32
05-ago-2015	25,91	14-ago-2015	37,44	05-ago-2015	163,73	05-ago-2015	7,39	04-ago-2015	6,41	05-ago-2015	61,56
06-ago-2015	25,74	17-ago-2015	37,87	06-ago-2015	160,30	06-ago-2015	7,43	05-ago-2015	6,23	06-ago-2015	61,13
07-ago-2015	25,08	18-ago-2015	37,43	07-ago-2015	158,58	07-ago-2015	7,10	06-ago-2015	6,02	07-ago-2015	60,51
10-ago-2015	25,14	19-ago-2015	36,57	10-ago-2015	159,40	10-ago-2015	7,43	07-ago-2015	6,13	10-ago-2015	60,87
11-ago-2015	24,82	20-ago-2015	36,02	11-ago-2015	157,06	11-ago-2015	7,11	10-ago-2015	6,25	11-ago-2015	59,82
12-ago-2015	24,55	21-ago-2015	34,77	12-ago-2015	155,77	12-ago-2015	7,05	11-ago-2015	6,17	12-ago-2015	59,26
13-ago-2015	24,77	24-ago-2015	32,96	13-ago-2015	155,96	13-ago-2015	6,80	12-ago-2015	5,97	13-ago-2015	59,73
14-ago-2015	25,45	25-ago-2015	31,91	14-ago-2015	158,03	14-ago-2015	6,98	13-ago-2015	6,02	14-ago-2015	59,72
17-ago-2015	25,00	26-ago-2015	33,14	17-ago-2015	157,04	17-ago-2015	6,90	14-ago-2015	5,97	17-ago-2015	59,40
18-ago-2015	24,89	27-ago-2015	34,50	18-ago-2015	158,85	18-ago-2015	6,77	17-ago-2015	5,97	18-ago-2015	59,45
19-ago-2015	24,64	28-ago-2015	34,70	19-ago-2015	153,73	19-ago-2015	6,48	18-ago-2015	5,99	19-ago-2015	58,62
20-ago-2015	24,16	31-ago-2015	34,95	20-ago-2015	148,09	20-ago-2015	6,16	19-ago-2015	5,87	20-ago-2015	56,62
23-ago-2015	24,63	01-set-2015	32,63	21-ago-2015	142,64	21-ago-2015	6,36	20-ago-2015	5,87	23-ago-2015	57,25
24-ago-2015	22,73	02-set-2015	32,34	24-ago-2015	135,56	24-ago-2015	6,25	21-ago-2015	5,77	24-ago-2015	55,77
25-ago-2015	23,27	03-set-2015	32,74	25-ago-2015	136,34	25-ago-2015	6,31	24-ago-2015	5,63	25-ago-2015	57,27
26-ago-2015	22,80	04-set-2015	32,25	26-ago-2015	142,53	26-ago-2015	6,88	25-ago-2015	5,96	26-ago-2015	57,50
27-ago-2015	23,90	07-set-2015	32,09	27-ago-2015	146,05	27-ago-2015	7,17	26-ago-2015	5,83	27-ago-2015	58,09
28-ago-2015	23,98	08-set-2015	30,85	28-ago-2015	147,36	28-ago-2015	6,95	27-ago-2015	5,80	28-ago-2015	58,69
31-ago-2015	23,73	09-set-2015	31,86	31-ago-2015	144,88	31-ago-2015	7,13	28-ago-2015	5,85	31-ago-2015	58,81
01-set-2015	23,56	10-set-2015	30,91	01-set-2015	140,86	01-set-2015	6,58	31-ago-2015	5,80	01-set-2015	58,01
02-set-2015	24,02	11-set-2015	30,77	02-set-2015	144,66	02-set-2015	6,77	01-set-2015	5,77	02-set-2015	58,16
03-set-2015	24,10	14-set-2015	30,62	03-set-2015	145,05	03-set-2015	6,70	02-set-2015	5,76	03-set-2015	59,35
04-set-2015	23,88	15-set-2015	30,90	04-set-2015	135,36	04-set-2015	6,91	03-set-2015	5,89	04-set-2015	58,45
07-set-2015	23,18	16-set-2015	30,98	08-set-2015	132,98	08-set-2015	7,11	04-set-2015	5,65	07-set-2015	58,55
08-set-2015	23,48	17-set-2015	30,24	09-set-2015	132,80	09-set-2015	7,09	07-set-2015	5,74	08-set-2015	58,66
09-set-2015	23,58	18-set-2015	29,92	10-set-2015	131,76	10-set-2015	7,11	08-set-2015	5,81	09-set-2015	59,04
10-set-2015	23,76	24-set-2015	29,28	11-set-2015	131,99	11-set-2015	7,19	09-set-2015	5,81	10-set-2015	58,77
11-set-2015	23,98	25-set-2015	30,94	14-set-2015	130,59	14-set-2015	7,02	10-set-2015	6,13	11-set-2015	58,32
14-set-2015	24,98	28-set-2015	29,72	15-set-2015	131,89	15-set-2015	7,06	11-set-2015	6,10	14-set-2015	57,95
15-set-2015	25,18	29-set-2015	28,39	16-set-2015	132,81	16-set-2015	7,22	14-set-2015	6,07	15-set-2015	57,80
16-set-2015	25,15	30-set-2015	29,14	17-set-2015	131,65	17-set-2015	7,22	15-set-2015	6,08	16-set-2015	58,49
17-set-2015	25,31	01-ott-2015	31,04	18-set-2015	135,32	18-set-2015	7,17	16-set-2015	6,10	17-set-2015	58,45
18-set-2015	25,88	02-ott-2015	31,22	21-set-2015	138,44	21-set-2015	7,05	17-set-2015	6,15	18-set-2015	58,31
21-set-2015	25,39	05-ott-2015	32,14	22-set-2015	138,91	22-set-2015	6,94	18-set-2015	6,05	21-set-2015	59,14
22-set-2015	24,95	06-ott-2015	33,24	23-set-2015	138,60	23-set-2015	6,62	21-set-2015	6,01	22-set-2015	58,65
23-set-2015	24,59	07-ott-2015	33,37	24-set-2015	137,06	24-set-2015	6,55	22-set-2015	5,92	23-set-2015	59,41
24-set-2015	25,04	08-ott-2015	32,37	25-set-2015	133,88	25-set-2015	6,38	23-set-2015	5,92	24-set-2015	58,39
25-set-2015	25,68	08-ott-2015	32,45	28-set-2015	128,76	28-set-2015	6,25	24-set-2015	5,79	25-set-2015	60,61
28-set-2015	24,55	13-ott-2015	31,60	29-set-2015	129,20	29-set-2015	6,38	25-set-2015	6,03	28-set-2015	59,72
29-set-2015	24,97	14-ott-2015	31,40	30-set-2015	133,20	30-set-2015	6,94	28-set-2015	5,78	29-set-2015	59,17
30-set-2015	25,00	15-ott-2015	32,39	01-ott-2015	131,04	01-ott-2015	6,62	29-set-2015	5,62	30-set-2015	61,20
01-ott-2015	24,49	16-ott-2015	32,89	02-ott-2015	132,81	02-ott-2015	7,00	30-set-2015	5,83	01-ott-2015	60,63
02-ott-2015	25,78	19-ott-2015	32,73	05-ott-2015	127,48	05-ott-2015	6,91	01-ott-2015	6,02	02-ott-2015	60,75
05-ott-2015	26,81	20-ott-2015	32,69	06-ott-2015	128,43	06-ott-2015	7,21	02-ott-2015	6,01	05-ott-2015	61,62
06-ott-2015	26,60	21-ott-2015	33,39	07-ott-2015	127,00	07-ott-2015	7,48	05-ott-2015	6,22	06-ott-2015	61,72
07-ott-2015	26,51	22-ott-2015	33,39	08-ott-2015	125,90	08-ott-2015	7,65	06-ott-2015	6,35	07-ott-2015	61,54
08-ott-2015	26,59	23-ott-2015	34,34	09-ott-2015	121,21	09-ott-2015	7,59	07-ott-2015	6,36	08-ott-2015	62,36
09-ott-2015	26,58	26-ott-2015	34,48	12-ott-2015	122,58	12-ott-2015	7,59	08-ott-2015	6,52	09-ott-2015	61,86
12-ott-2015	26,62	27-ott-2015	34,10	13-ott-2015	122,57	13-ott-2015	7,55	09-ott-2015	6,50	12-ott-2015	62,22
13-ott-2015	26,58	28-ott-2015	34,37	14-ott-2015	122,19	14-ott-2015	7,28	12-ott-2015	6,56	13-ott-2015	61,81
14-ott-2015	26,18	29-ott-2015	36,53	15-ott-2015	127,60	15-ott-2015	7,85	13-ott-2015	6,56	14-ott-2015	61,03
15-ott-2015	26,18	30-ott-2015	37,89	16-ott-2015	127,22	16-ott-2015	7,63	14-ott-2015	6,45	15-ott-2015	61,08
15-ott-2015	26,18	30-ott-2015	37,89	17-ott-2015	128,91	17-ott-2015	7,57	15-ott-2015	6,53	16-ott-2015	61,09
19-ott-2015	26,64	04-nov-2015	38,22	20-ott-2015	127,79	20-ott-2015	7,25	16-ott-2015	6,21	19-ott-2015	61,61
20-ott-2015	26,46	05-nov-2015	37,81	21-ott-2015	128,90	21-ott-2015	7,06	19-ott-2015	6,32	20-ott-2015	61,47
21-ott-2015	26,60	06-nov-2015	37,82	22-ott-2015	129,18	22-ott-2015	7,16	20-ott-2015	6,18	21-ott-2015	61,67
22-ott-2015	26,60	09-nov-2015	38,05	23-ott-2015	132,84	23-ott-2015	7,22	21-ott-2015	6,15	22-ott-2015	62,21
23-ott-2015	26,60	10-nov-2015	38,28	26-ott-2015	132,54	26-ott-2015	6,75	22-ott-2015	6,30	23-ott-2015	63,30
26-ott-2015	26,60	11-nov-2015	38,26	27-ott-2015	132,60	27-ott-2015	6,77	23-ott-2015	6,33	26-ott-2015	63,72
27-ott-2015	26,51	12-nov-2015									

04-gen-2016	27,96	21-gen-2016	34,69	04-gen-2016	121,77	04-gen-2016	6,57	30-dic-2015	5,97	04-gen-2016	67,28
05-gen-2016	28,21	22-gen-2016	35,62	05-gen-2016	122,45	05-gen-2016	6,62	04-gen-2016	5,86	05-gen-2016	67,36
06-gen-2016	28,35	25-gen-2016	36,12	06-gen-2016	122,99	06-gen-2016	6,54	05-gen-2016	5,81	06-gen-2016	68,36
07-gen-2016	26,98	26-gen-2016	35,43	07-gen-2016	117,03	07-gen-2016	6,23	06-gen-2016	5,64	07-gen-2016	65,64
08-gen-2016	26,62	27-gen-2016	36,08	08-gen-2016	117,77	08-gen-2016	6,27	07-gen-2016	5,64	08-gen-2016	65,08
11-gen-2016	26,05	28-gen-2016	34,44	11-gen-2016	117,56	11-gen-2016	6,32	08-gen-2016	5,46	11-gen-2016	64,22
12-gen-2016	26,94	29-gen-2016	35,08	12-gen-2016	117,56	12-gen-2016	6,36	11-gen-2016	5,35	12-gen-2016	65,70
13-gen-2016	27,37	01-feb-2016	34,19	13-gen-2016	115,38	13-gen-2016	6,24	12-gen-2016	5,24	13-gen-2016	65,31
14-gen-2016	27,08	02-feb-2016	35,29	14-gen-2016	114,18	14-gen-2016	6,29	13-gen-2016	5,44	14-gen-2016	64,44
15-gen-2016	26,81	03-feb-2016	33,32	15-gen-2016	111,65	15-gen-2016	6,22	14-gen-2016	5,35	15-gen-2016	64,18
18-gen-2016	26,56	04-feb-2016	32,67	18-gen-2016	110,97	18-gen-2016	6,22	15-gen-2016	5,31	18-gen-2016	63,67
19-gen-2016	26,97	05-feb-2016	32,48	20-gen-2016	114,01	20-gen-2016	6,49	18-gen-2016	5,20	19-gen-2016	64,60
20-gen-2016	27,40	08-feb-2016	32,66	21-gen-2016	113,92	21-gen-2016	6,32	19-gen-2016	5,32	20-gen-2016	63,92
21-gen-2016	26,56	09-feb-2016	29,49	22-gen-2016	118,45	22-gen-2016	6,37	20-gen-2016	5,23	21-gen-2016	64,39
22-gen-2016	26,97	10-feb-2016	30,32	25-gen-2016	115,71	25-gen-2016	6,22	21-gen-2016	5,38	22-gen-2016	67,35
25-gen-2016	27,30	12-feb-2016	29,06	26-gen-2016	118,60	26-gen-2016	6,16	22-gen-2016	5,53	25-gen-2016	67,14
26-gen-2016	27,37	15-feb-2016	31,33	27-gen-2016	118,08	27-gen-2016	6,02	25-gen-2016	5,48	26-gen-2016	67,88
27-gen-2016	27,40	16-feb-2016	32,41	28-gen-2016	115,36	28-gen-2016	5,90	26-gen-2016	5,32	27-gen-2016	68,88
28-gen-2016	26,49	17-feb-2016	32,13	29-gen-2016	121,05	29-gen-2016	6,03	27-gen-2016	5,52	28-gen-2016	68,37
29-gen-2016	27,23	18-feb-2016	33,26	01-feb-2016	121,30	01-feb-2016	5,96	28-gen-2016	5,34	29-gen-2016	69,34
01-feb-2016	28,00	19-feb-2016	33,13	02-feb-2016	120,91	02-feb-2016	5,83	29-gen-2016	5,53	01-feb-2016	69,91
02-feb-2016	27,70	22-feb-2016	33,33	03-feb-2016	120,21	03-feb-2016	5,85	01-feb-2016	4,86	02-feb-2016	69,99
03-feb-2016	28,43	23-feb-2016	32,97	04-feb-2016	117,69	04-feb-2016	5,80	02-feb-2016	4,51	03-feb-2016	68,73
04-feb-2016	28,15	24-feb-2016	32,94	05-feb-2016	113,94	05-feb-2016	5,53	03-feb-2016	4,51	04-feb-2016	67,59
05-feb-2016	27,59	25-feb-2016	32,85	08-feb-2016	112,03	08-feb-2016	5,54	04-feb-2016	4,60	05-feb-2016	67,63
08-feb-2016	26,12	26-feb-2016	32,66	09-feb-2016	113,36	09-feb-2016	5,48	05-feb-2016	4,41	08-feb-2016	65,92
09-feb-2016	26,60	29-feb-2016	33,21	10-feb-2016	117,19	10-feb-2016	5,55	08-feb-2016	4,10	09-feb-2016	66,00
10-feb-2016	29,38	01-mar-2016	33,06	11-feb-2016	115,63	11-feb-2016	5,67	09-feb-2016	4,35	10-feb-2016	67,18
11-feb-2016	26,57	02-mar-2016	34,78	12-feb-2016	118,65	12-feb-2016	5,58	10-feb-2016	4,31	11-feb-2016	67,05
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15-feb-2016	27,65	04-mar-2016	34,73	17-feb-2016	125,22	17-feb-2016	5,85	12-feb-2016	4,29	15-feb-2016	66,20
16-feb-2016	27,78	07-mar-2016	33,98	18-feb-2016	125,70	18-feb-2016	5,63	15-feb-2016	4,50	16-feb-2016	66,49
17-feb-2016	27,35	08-mar-2016	34,32	19-feb-2016	128,52	19-feb-2016	5,62	16-feb-2016	4,49	17-feb-2016	66,80
18-feb-2016	29,35	09-mar-2016	33,58	22-feb-2016	129,25	22-feb-2016	5,71	17-feb-2016	4,73	18-feb-2016	66,75
19-feb-2016	28,88	10-mar-2016	33,72	23-feb-2016	128,04	23-feb-2016	5,67	18-feb-2016	4,74	19-feb-2016	66,74
22-feb-2016	29,01	11-mar-2016	33,61	24-feb-2016	128,45	24-feb-2016	5,63	19-feb-2016	4,61	22-feb-2016	67,10
23-feb-2016	28,58	14-mar-2016	34,04	25-feb-2016	131,53	25-feb-2016	5,63	22-feb-2016	4,70	23-feb-2016	67,19
24-feb-2016	29,43	15-mar-2016	34,27	26-feb-2016	132,48	26-feb-2016	5,67	23-feb-2016	4,61	24-feb-2016	68,32
25-feb-2016	29,12	16-mar-2016	33,44	29-feb-2016	131,51	29-feb-2016	5,73	24-feb-2016	4,46	25-feb-2016	64,48
26-feb-2016	28,86	17-mar-2016	33,84	01-mar-2016	133,89	01-mar-2016	5,71	25-feb-2016	4,55	26-feb-2016	64,64
29-feb-2016	28,95	18-mar-2016	33,29	02-mar-2016	131,98	02-mar-2016	5,83	26-feb-2016	4,59	29-feb-2016	63,61
01-mar-2016	29,55	22-mar-2016	35,17	03-mar-2016	132,37	03-mar-2016	6,63	29-feb-2016	4,82	01-mar-2016	64,52
02-mar-2016	29,42	23-mar-2016	35,20	04-mar-2016	138,75	04-mar-2016	6,69	01-mar-2016	4,99	02-mar-2016	64,31
03-mar-2016	28,91	24-mar-2016	34,72	07-mar-2016	138,17	07-mar-2016	6,90	02-mar-2016	4,95	03-mar-2016	64,70
04-mar-2016	28,53	25-mar-2016	35,29	08-mar-2016	135,27	08-mar-2016	6,51	03-mar-2016	4,79	04-mar-2016	64,66
07-mar-2016	28,51	28-mar-2016	35,50	09-mar-2016	134,52	09-mar-2016	6,66	04-mar-2016	4,85	07-mar-2016	64,83
08-mar-2016	28,02	29-mar-2016	35,06	10-mar-2016	133,34	10-mar-2016	6,31	07-mar-2016	4,89	08-mar-2016	64,54
09-mar-2016	29,63	30-mar-2016	34,46	11-mar-2016	134,95	11-mar-2016	6,44	08-mar-2016	4,81	09-mar-2016	65,35
10-mar-2016	27,50	31-mar-2016	33,43	14-mar-2016	134,07	14-mar-2016	6,31	09-mar-2016	4,80	10-mar-2016	64,51
11-mar-2016	27,40	01-apr-2016	32,65	15-mar-2016	131,40	15-mar-2016	6,45	10-mar-2016	4,72	11-mar-2016	65,51
14-mar-2016	27,45	04-apr-2016	33,22	16-mar-2016	130,00	16-mar-2016	6,32	11-mar-2016	4,82	14-mar-2016	66,25
15-mar-2016	27,17	05-apr-2016	33,42	17-mar-2016	127,69	17-mar-2016	6,21	14-mar-2016	4,84	15-mar-2016	66,35
16-mar-2016	29,62	06-apr-2016	33,00	18-mar-2016	133,13	18-mar-2016	6,57	15-mar-2016	4,69	16-mar-2016	66,18
17-mar-2016	27,11	07-apr-2016	33,57	21-mar-2016	133,96	21-mar-2016	6,42	16-mar-2016	4,47	17-mar-2016	66,00
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21-mar-2016	27,25	11-apr-2016	33,30	23-mar-2016	132,89	23-mar-2016	6,37	18-mar-2016	4,65	21-mar-2016	66,04
22-mar-2016	27,25	12-apr-2016	33,10	24-mar-2016	133,18	24-mar-2016	6,34	21-mar-2016	4,63	22-mar-2016	66,03
23-mar-2016	27,35	13-apr-2016	34,27	28-mar-2016	133,51	28-mar-2016	6,32	22-mar-2016	4,65	23-mar-2016	66,51
24-mar-2016	26,99	14-apr-2016	35,62	29-mar-2016	136,99	29-mar-2016	6,57	23-mar-2016	4,54	24-mar-2016	65,74
29-mar-2016	26,88	15-apr-2016	35,25	30-mar-2016	137,66	30-mar-2016	6,42	24-mar-2016	4,41	29-mar-2016	65,86
30-mar-2016	27,18	18-apr-2016	34,20	31-mar-2016	136,32	31-mar-2016	6,49	29-mar-2016	4,36	30-mar-2016	66,56
31-mar-2016	27,14	19-apr-2016	35,28	01-apr-2016	138,42	01-apr-2016	6,47	30-mar-2016	4,46	31-mar-2016	66,70
01-apr-2016	29,42	20-apr-2016	34,69	04-apr-2016	137,55	04-apr-2016	6,46	31-mar-2016	4,37	01-apr-2016	67,01
04-apr-2016	27,12	21-apr-2016	35,70	05-apr-2016	136,55	05-apr-2016	6,50	01-apr-2016	4,35	04-apr-2016	67,92
05-apr-2016	28,64	22-apr-2016	35,06	06-apr-2016	139,96	06-apr-2016	6,56	04-apr-2016	4,28	05-apr-2016	67,50
06-apr-2016	28,88	25-apr-2016	35,74	07-apr-2016	137,37	07-apr-2016	6,63	05-apr-2016	4,34	06-apr-2016	67,74
08-apr-2016	29,16	26-apr-2016	36,09	08-apr-2016	138,16	08-apr-2016	6,75	06-apr-2016	4,35	07-apr-2016	67,37
09-apr-2016	29,28	27-apr-2016	34,51	11-apr-2016	135,85	11-apr-2016	6,93	07-apr-2016	4,29	08-apr-2016	66,85
11-apr-2016	29,00	28-apr-2016	34,73	12-apr-2016	136,55	12-apr-2016	6,89	08-apr-2016	4,25	11-apr-2016	67,03
12-apr-2016	29,06	02-mag-2016	33,51	13-apr-2016	137,33	13-apr-2016	6,88	11-apr-2016	4,41	12-apr-2016	66,98
13-apr-2016	28,77	06-mag-2016	33,66	14-apr-2016	136,49	14-apr-2016	6,82	12-apr-2016	4,26	13-apr-2016	67,38
14-apr-2016	29,12	05-apr-2016	31,86	15-apr-2016	138,50	15-apr-2016	6,90	13-apr-2016	4,40	14-apr-2016	67,54
16-apr-2016	29,84	08-apr-2016	34,46	18-apr-2016	138,96	18-apr-2016	7,05	14-apr-2016	4,34	16-apr-2016	67,32
17-apr-2016	27,11	07-apr-2016	33,57	19-apr-2016	138,65	19-apr-2016	6,86	15-apr-2016	4,26	17-apr-2016	67,50
18-mar-2016	27,28	08-apr-2016	34,51	22-mar-2016	133,64	22-mar-2016	6,60	18-apr-2016	4,34	18-mar-2016	67,85
21-mar-2016	27,25	11-apr-2016	33,30	23-mar-2016	132,89	23-mar-2016	6,37	18-apr-2016	4,65	21-mar-2016	66,04
22-mar-2016	27,25	12-apr-2016	33,10	24-mar-2016	133,18	24-mar-2016	6,34	21-mar-2016	4,63	22-mar-2016	66,03
23-mar-2016	27,35	13-apr-2016	34,27	28-mar-2016	133,51	28-mar-2016	6,32	22-mar-2016	4,65	23-mar-2016	66,51
24-mar-2016	26,99	14-apr-2016	35,62	29-mar-2016	136,99	29-mar-2016	6,57	23-mar-2016	4,54	24-mar-2016	65,74
29-mar-2016	26,88	15-apr-2016	35,25	30-mar-2016	137,66	30-mar-2016	6,42	24-mar-2016	4,41	29-mar-2016	65,86
30-mar-2016	27,18	18-apr-2016	34,20	31-mar-2016	136,32	31-mar-2016	6,49	29-mar-2016	4,36	30-mar-2016	66,56
31-mar-2016	27,14	19-apr-2016	35,28	01-apr-2016	138,42	01-apr-2016	6,47	30-mar-2016	4,46	31-mar-2016	66,70
01-apr-2016	29,42	20-apr-2016	34,69	04-apr-2016	137,55	04-apr-2016	6,46	31-mar-2016	4,37	01-apr-2016	67,01
04-apr-2016	27,12	21-apr-2016	35,70	05-apr-2016	136,55	05-apr-2016	6,50	01-apr-2016	4,35	04-apr-2016	67,92
05-apr-2016	28,64	22-apr-2016	35,06	06-apr-2016	139,96	06-apr-2016	6,56	04-apr-2016	4,28	05-apr-2016	67,50
06-apr-2016	28,88	25-apr-2016									

01-ago-2016	33,48	25-ago-2016	34,68	03-ago-2016	162,64	03-ago-2016	5,95	28-lug-2016	3,98	01-ago-2016	69,32
02-ago-2016	33,65	26-ago-2016	34,58	04-ago-2016	163,34	04-ago-2016	7,40	29-lug-2016	3,96	02-ago-2016	68,51
03-ago-2016	33,33	29-ago-2016	35,17	05-ago-2016	164,97	05-ago-2016	7,65	01-ago-2016	3,99	03-ago-2016	68,55
04-ago-2016	33,33	30-ago-2016	35,05	06-ago-2016	163,47	06-ago-2016	7,53	02-ago-2016	3,86	04-ago-2016	68,91
05-ago-2016	33,63	31-ago-2016	34,75	07-ago-2016	163,85	07-ago-2016	7,48	03-ago-2016	3,90	05-ago-2016	69,59
08-ago-2016	33,32	01-set-2016	35,45	10-ago-2016	162,18	10-ago-2016	7,46	04-ago-2016	4,51	08-ago-2016	69,33
08-ago-2016	34,22	02-set-2016	34,06	11-ago-2016	163,66	11-ago-2016	7,42	05-ago-2016	4,56	08-ago-2016	69,92
10-ago-2016	33,58	05-set-2016	33,97	25-ago-2016	162,05	12-ago-2016	7,97	08-ago-2016	4,56	10-ago-2016	69,85
11-ago-2016	34,06	06-set-2016	34,66	15-ago-2016	162,73	15-ago-2016	8,17	09-ago-2016	4,52	11-ago-2016	70,68
12-ago-2016	33,39	07-set-2016	35,01	16-ago-2016	160,80	16-ago-2016	8,17	10-ago-2016	4,40	12-ago-2016	70,92
15-ago-2016	33,80	08-set-2016	35,21	17-ago-2016	159,33	17-ago-2016	8,12	11-ago-2016	4,46	15-ago-2016	71,10
16-ago-2016	33,66	09-set-2016	35,20	18-ago-2016	159,77	18-ago-2016	7,94	12-ago-2016	4,51	16-ago-2016	70,73
17-ago-2016	33,33	12-set-2016	34,72	19-ago-2016	162,35	19-ago-2016	8,06	16-ago-2016	4,55	17-ago-2016	70,39
18-ago-2016	33,35	13-set-2016	35,00	22-ago-2016	162,78	22-ago-2016	8,13	17-ago-2016	4,48	18-ago-2016	70,99
19-ago-2016	33,41	14-set-2016	34,79	23-ago-2016	164,37	23-ago-2016	7,94	18-ago-2016	4,55	19-ago-2016	71,93
22-ago-2016	32,95	15-set-2016	34,45	24-ago-2016	164,30	24-ago-2016	7,79	19-ago-2016	4,50	22-ago-2016	71,42
23-ago-2016	32,95	16-set-2016	35,43	25-ago-2016	162,97	25-ago-2016	7,89	22-ago-2016	4,74	23-ago-2016	71,37
24-ago-2016	33,00	20-set-2016	35,88	26-ago-2016	164,29	26-ago-2016	7,96	23-ago-2016	4,75	24-ago-2016	71,55
25-ago-2016	33,00	21-set-2016	37,02	29-ago-2016	166,75	29-ago-2016	7,93	24-ago-2016	4,87	25-ago-2016	71,44
26-ago-2016	33,06	23-set-2016	36,35	30-ago-2016	167,29	30-ago-2016	8,02	25-ago-2016	4,85	26-ago-2016	69,30
29-ago-2016	33,00	26-set-2016	36,23	31-ago-2016	166,65	31-ago-2016	7,87	26-ago-2016	4,90	29-ago-2016	71,37
30-ago-2016	32,95	27-set-2016	36,57	01-set-2016	166,57	01-set-2016	7,78	29-ago-2016	4,81	30-ago-2016	70,17
31-ago-2016	32,62	29-set-2016	35,90	02-set-2016	166,70	02-set-2016	8,03	30-ago-2016	4,79	31-ago-2016	70,12
01-set-2016	32,73	29-set-2016	36,08	06-set-2016	167,35	06-set-2016	7,90	31-ago-2016	4,75	01-set-2016	70,47
02-set-2016	33,00	30-set-2016	35,46	07-set-2016	167,80	07-set-2016	8,15	01-set-2016	4,70	02-set-2016	71,14
05-set-2016	33,27	03-ott-2016	36,38	08-set-2016	165,87	08-set-2016	7,99	02-set-2016	4,74	05-set-2016	71,38
06-set-2016	33,30	04-ott-2016	36,37	09-set-2016	164,00	09-set-2016	7,75	05-set-2016	4,76	06-set-2016	71,61
07-set-2016	33,33	05-ott-2016	36,16	12-set-2016	166,26	12-set-2016	8,09	06-set-2016	4,75	07-set-2016	71,54
08-set-2016	32,78	06-ott-2016	36,01	13-set-2016	165,65	13-set-2016	7,67	07-set-2016	4,76	08-set-2016	70,88
09-set-2016	32,69	07-ott-2016	36,44	14-set-2016	164,93	14-set-2016	7,70	08-set-2016	4,71	09-set-2016	70,40
12-set-2016	32,83	11-ott-2016	36,64	15-set-2016	168,94	15-set-2016	7,86	09-set-2016	4,61	12-set-2016	70,17
13-set-2016	32,70	12-ott-2016	35,81	16-set-2016	166,02	16-set-2016	8,35	12-set-2016	4,57	13-set-2016	70,00
14-set-2016	33,78	13-ott-2016	36,53	18-set-2016	168,68	18-set-2016	8,63	13-set-2016	4,76	14-set-2016	70,25
15-set-2016	34,01	14-ott-2016	35,67	20-set-2016	167,15	20-set-2016	8,47	14-set-2016	4,55	15-set-2016	70,61
16-set-2016	33,98	17-ott-2016	36,30	21-set-2016	166,45	21-set-2016	8,44	15-set-2016	4,84	16-set-2016	71,33
19-set-2016	34,30	18-ott-2016	36,45	22-set-2016	164,63	22-set-2016	8,48	16-set-2016	4,74	19-set-2016	71,90
20-set-2016	34,30	19-ott-2016	36,46	23-set-2016	161,26	23-set-2016	8,39	19-set-2016	4,82	20-set-2016	72,53
21-set-2016	34,30	20-ott-2016	36,50	26-set-2016	168,35	26-set-2016	8,12	20-set-2016	4,75	21-set-2016	71,73
22-set-2016	34,66	21-ott-2016	36,79	27-set-2016	159,01	27-set-2016	8,35	21-set-2016	4,72	22-set-2016	72,36
23-set-2016	34,07	24-ott-2016	36,36	28-set-2016	159,51	28-set-2016	8,28	22-set-2016	4,91	23-set-2016	72,27
26-set-2016	33,31	25-ott-2016	36,40	29-set-2016	156,89	29-set-2016	8,16	23-set-2016	4,97	26-set-2016	72,07
27-set-2016	33,34	26-ott-2016	36,30	30-set-2016	159,51	30-set-2016	8,36	26-set-2016	4,87	27-set-2016	72,73
29-set-2016	34,07	27-ott-2016	37,66	03-ott-2016	158,58	03-ott-2016	8,38	27-set-2016	4,76	28-set-2016	72,61
29-set-2016	34,07	28-ott-2016	38,39	04-ott-2016	157,90	04-ott-2016	8,26	28-set-2016	4,85	29-set-2016	72,36
30-set-2016	34,03	01-nov-2016	38,11	05-ott-2016	158,16	05-ott-2016	8,32	29-set-2016	4,79	30-set-2016	72,55
04-ott-2016	34,77	01-nov-2016	38,22	06-ott-2016	160,27	06-ott-2016	8,40	30-set-2016	4,76	04-ott-2016	73,30
05-ott-2016	34,14	02-nov-2016	37,77	07-ott-2016	161,51	07-ott-2016	8,38	03-ott-2016	4,77	05-ott-2016	72,61
06-ott-2016	34,05	03-nov-2016	37,85	10-ott-2016	163,40	10-ott-2016	8,38	04-ott-2016	4,91	06-ott-2016	72,75
07-ott-2016	33,80	07-nov-2016	37,40	11-ott-2016	162,51	11-ott-2016	8,82	05-ott-2016	4,99	07-ott-2016	72,33
10-ott-2016	34,47	08-nov-2016	37,26	12-ott-2016	162,89	12-ott-2016	8,77	06-ott-2016	5,30	10-ott-2016	72,62
11-ott-2016	34,49	09-nov-2016	35,40	13-ott-2016	161,53	13-ott-2016	8,50	07-ott-2016	5,30	11-ott-2016	72,95
12-ott-2016	33,67	10-nov-2016	37,49	14-ott-2016	161,90	14-ott-2016	8,39	10-ott-2016	5,30	12-ott-2016	72,51
13-ott-2016	33,00	11-nov-2016	37,53	17-ott-2016	162,17	17-ott-2016	8,11	11-ott-2016	5,31	13-ott-2016	72,46
14-ott-2016	34,39	14-nov-2016	37,81	18-ott-2016	164,58	18-ott-2016	8,61	12-ott-2016	5,27	14-ott-2016	72,92
17-ott-2016	33,94	15-nov-2016	38,29	19-ott-2016	163,12	19-ott-2016	8,61	13-ott-2016	5,30	17-ott-2016	73,21
18-ott-2016	34,72	16-nov-2016	38,37	20-ott-2016	164,26	20-ott-2016	8,65	14-ott-2016	5,47	18-ott-2016	73,83
19-ott-2016	34,42	17-nov-2016	38,30	21-ott-2016	164,29	21-ott-2016	8,68	17-ott-2016	5,42	19-ott-2016	74,20
23-ott-2016	34,52	18-nov-2016	37,76	24-ott-2016	165,72	24-ott-2016	8,56	18-ott-2016	5,45	23-ott-2016	74,49
21-ott-2016	34,51	21-nov-2016	38,01	25-ott-2016	166,83	25-ott-2016	8,41	19-ott-2016	5,51	21-ott-2016	72,93
24-ott-2016	34,22	22-nov-2016	38,00	26-ott-2016	161,55	26-ott-2016	8,16	20-ott-2016	5,44	24-ott-2016	69,43
25-ott-2016	34,46	24-nov-2016	37,71	27-ott-2016	160,90	27-ott-2016	8,17	21-ott-2016	5,44	25-ott-2016	69,76
26-ott-2016	33,75	25-nov-2016	38,12	28-ott-2016	159,67	28-ott-2016	7,92	24-ott-2016	5,47	26-ott-2016	67,87
27-ott-2016	33,93	31-ott-2016	37,80	31-ott-2016	160,34	31-ott-2016	7,70	25-ott-2016	5,53	27-ott-2016	65,90
28-ott-2016	32,95	29-nov-2016	37,62	01-nov-2016	157,21	01-nov-2016	7,60	26-ott-2016	5,35	28-ott-2016	67,51
31-ott-2016	32,76	30-nov-2016	37,14	02-nov-2016	156,70	02-nov-2016	7,39	27-ott-2016	5,39	31-ott-2016	63,18
01-nov-2016	32,64	01-dic-2016	37,28	03-nov-2016	156,39	03-nov-2016	7,57	28-ott-2016	5,41	01-nov-2016	62,94
02-nov-2016	32,46	02-dic-2016	34,86	04-nov-2016	157,93	04-nov-2016	8,38	31-ott-2016	5,21	02-nov-2016	62,99
03-nov-2016	32,78	05-dic-2016	36,03	07-nov-2016	163,27	07-nov-2016	8,24	01-nov-2016	5,33	03-nov-2016	62,75
04-nov-2016	31,52	06-dic-2016	35,84	08-nov-2016	165,93	08-nov-2016	8,30	02-nov-2016	5,24	04-nov-2016	62,18
07-nov-2016	33,00	07-dic-2016	36,32	09-nov-2016	166,61	09-nov-2016	8,71	03-nov-2016	5,22	07-nov-2016	60,09
08-nov-2016	32,83	08-dic-2016	36,79	10-nov-2016	165,55	10-nov-2016	9,00	04-nov-2016	5,21	08-nov-2016	60,44
09-nov-2016	32,97	09-dic-2016	36,97	11-nov-2016	163,38	11-nov-2016	9,77	07-nov-2016	5,26	09-nov-2016	60,60
10-nov-2016	31,43	12-dic-2016	36,88	15-nov-2016	158,50	14-nov-2016	9,74	08-nov-2016	5,30	10-nov-2016	60,54
11-nov-2016	31,25	13-dic-2016	36,80	15-nov-2016	160,40	15-nov-2016	9,79	09-nov-2016	5,14	11-nov-2016	60,19
14-nov-2016	31,16	14-dic-2016	37,42	16-nov-2016	160,97	16-nov-2016	9,83	10-nov-2016	4,44	14-nov-2016	60,25
15-nov-2016	31,74	15-dic-2016	38,52	17-nov-2016	164,14	17-nov-2016	9,93	11-nov-2016	4,62	15-nov-2016	60,30
16-nov-2016	31,96	16-dic-2016	38,17	18-nov-2016	162,49	18-nov-2016	10,25	14-nov-2016	4,62	16-nov-2016	60,92
17-nov-2016	31,83	19-dic-2016	38,78	21-nov-2016	163,08	21-nov-2016	10,12	15-nov-2016	4,44	17-nov-2016	61,10
18-nov-2016	32,41	20-dic-2016	40,20	22-nov-2016	160,02	22-nov-2016	9,98	16-nov-2016	4,33	18-nov-2016	60,52
21-nov-2016	32,46	21-dic-2016	39,50	23-nov-2016	159,79	23-nov-2016	10,37	17-nov-2016	4,50	21-nov-2016	60,38
22-nov-2016	31,53	22-dic-2016	39,57	25-nov-2016	161,28	25-nov-2016	10,30	18-nov-2016	4,42	22-nov-2016	60,13
23-nov-2016	31,00	26-dic-2016	39,83	28-nov-2016	159,81	28-nov-2016	10,03	21-nov-2016	4,42	23-nov-2016	59,50
24-nov-2016	31,69	27-dic-2016	39,86	29-nov-2016	159,81	29-nov-2016	10,03	22-nov-2016	4,39	24-nov-2016	59,75
25-nov-2016	31,90	28-dic-2016	39,88	30-nov-2016	155,40	30-nov-2016	10,25	23-nov-2016	4,40	25-nov-2016	59,25
28-nov-2016	31,89	29-dic-20									

28-feb-2017	40,84	05-apr-2017	46,09	08-mar-2017	184,13	08-mar-2017	9,25	24-feb-2017	3,55	28-feb-2017	69,93
01-mar-2017	41,20	06-apr-2017	45,05	09-mar-2017	184,03	09-mar-2017	9,17	27-feb-2017	3,57	01-mar-2017	71,04
02-mar-2017	41,17	07-apr-2017	44,79	10-mar-2017	182,13	10-mar-2017	9,25	28-feb-2017	3,62	02-mar-2017	71,49
03-mar-2017	41,18	10-apr-2017	44,88	13-mar-2017	182,53	13-mar-2017	9,01	01-mar-2017	3,60	03-mar-2017	70,98
06-mar-2017	41,40	11-apr-2017	45,52	14-mar-2017	182,51	14-mar-2017	9,10	02-mar-2017	3,60	06-mar-2017	71,10
07-mar-2017	41,42	12-apr-2017	44,52	15-mar-2017	181,41	15-mar-2017	9,13	03-mar-2017	3,66	07-mar-2017	71,00
08-mar-2017	41,68	13-apr-2017	44,37	16-mar-2017	179,98	16-mar-2017	9,15	06-mar-2017	3,64	08-mar-2017	70,90
09-mar-2017	41,40	14-apr-2017	44,26	17-mar-2017	181,76	17-mar-2017	9,21	07-mar-2017	3,64	09-mar-2017	72,59
10-mar-2017	41,40	17-apr-2017	44,05	20-mar-2017	182,77	20-mar-2017	9,03	08-mar-2017	3,66	10-mar-2017	72,10
13-mar-2017	41,30	18-apr-2017	43,88	21-mar-2017	180,74	21-mar-2017	8,60	09-mar-2017	3,66	13-mar-2017	71,55
14-mar-2017	41,30	19-apr-2017	43,82	22-mar-2017	186,08	22-mar-2017	8,89	10-mar-2017	3,68	14-mar-2017	71,66
15-mar-2017	41,25	20-apr-2017	43,62	23-mar-2017	184,97	23-mar-2017	8,86	13-mar-2017	3,71	15-mar-2017	71,63
16-mar-2017	41,40	21-apr-2017	43,88	24-mar-2017	185,05	24-mar-2017	8,85	14-mar-2017	3,67	16-mar-2017	71,70
17-mar-2017	41,34	24-apr-2017	43,10	27-mar-2017	183,93	27-mar-2017	8,88	15-mar-2017	3,69	17-mar-2017	71,92
20-mar-2017	41,97	25-apr-2017	43,29	28-mar-2017	184,11	28-mar-2017	8,97	16-mar-2017	3,56	20-mar-2017	72,04
21-mar-2017	40,98	26-apr-2017	44,14	29-mar-2017	186,15	29-mar-2017	9,06	17-mar-2017	3,54	21-mar-2017	71,38
22-mar-2017	38,94	27-apr-2017	44,30	30-mar-2017	185,63	30-mar-2017	9,27	20-mar-2017	3,53	22-mar-2017	71,63
23-mar-2017	39,96	28-apr-2017	43,81	31-mar-2017	187,71	31-mar-2017	9,20	21-mar-2017	3,54	23-mar-2017	71,66
24-mar-2017	38,94	01-mag-2017	43,95	03-apr-2017	187,13	03-apr-2017	9,19	22-mar-2017	3,48	24-mar-2017	72,16
27-mar-2017	38,85	02-mag-2017	44,09	04-apr-2017	187,22	04-apr-2017	9,18	23-mar-2017	3,52	27-mar-2017	71,99
28-mar-2017	39,22	08-mag-2017	45,81	05-apr-2017	186,09	05-apr-2017	8,91	24-mar-2017	3,59	28-mar-2017	72,16
29-mar-2017	40,01	09-mag-2017	44,85	06-apr-2017	186,05	06-apr-2017	8,93	27-mar-2017	3,59	29-mar-2017	71,85
30-mar-2017	39,75	10-mag-2017	45,03	07-apr-2017	186,06	07-apr-2017	8,96	28-mar-2017	3,69	30-mar-2017	72,85
31-mar-2017	39,98	11-mag-2017	44,52	10-apr-2017	186,01	10-apr-2017	9,06	29-mar-2017	3,74	31-mar-2017	72,44
03-apr-2017	39,64	12-mag-2017	44,64	11-apr-2017	186,19	11-apr-2017	9,10	30-mar-2017	3,66	03-apr-2017	72,59
04-apr-2017	40,81	15-mag-2017	44,10	12-apr-2017	184,79	12-apr-2017	8,91	31-mar-2017	3,71	04-apr-2017	72,86
05-apr-2017	41,10	16-mag-2017	44,53	13-apr-2017	184,97	13-apr-2017	8,76	03-apr-2017	3,72	05-apr-2017	72,59
06-apr-2017	41,03	17-mag-2017	44,36	17-apr-2017	184,79	17-apr-2017	8,82	04-apr-2017	3,67	06-apr-2017	72,73
07-apr-2017	41,42	18-mag-2017	44,21	18-apr-2017	183,46	18-apr-2017	8,81	05-apr-2017	3,65	07-apr-2017	72,77
10-apr-2017	41,68	19-mag-2017	43,96	19-apr-2017	185,11	19-apr-2017	8,87	06-apr-2017	3,60	10-apr-2017	73,83
11-apr-2017	41,75	22-mag-2017	43,58	20-apr-2017	187,14	20-apr-2017	8,91	07-apr-2017	3,61	11-apr-2017	73,50
12-apr-2017	42,20	23-mag-2017	43,37	21-apr-2017	186,06	21-apr-2017	8,76	10-apr-2017	3,62	12-apr-2017	73,91
13-apr-2017	43,20	24-mag-2017	43,76	24-apr-2017	185,46	24-apr-2017	8,83	11-apr-2017	3,62	13-apr-2017	74,22
18-apr-2017	42,00	25-mag-2017	43,91	25-apr-2017	184,27	25-apr-2017	9,15	12-apr-2017	3,54	18-apr-2017	73,72
19-apr-2017	42,61	26-mag-2017	43,65	26-apr-2017	183,43	26-apr-2017	9,72	13-apr-2017	3,52	19-apr-2017	73,68
20-apr-2017	41,93	29-mag-2017	43,89	27-apr-2017	183,38	27-apr-2017	9,80	18-apr-2017	3,49	20-apr-2017	73,90
21-apr-2017	41,32	30-mag-2017	44,02	28-apr-2017	183,87	28-apr-2017	9,55	19-apr-2017	3,60	21-apr-2017	74,61
24-apr-2017	41,35	31-mag-2017	44,81	01-mag-2017	184,49	01-mag-2017	9,26	20-apr-2017	3,67	24-apr-2017	73,85
25-apr-2017	41,89	01-giu-2017	44,66	02-mag-2017	184,97	02-mag-2017	9,56	21-apr-2017	3,57	25-apr-2017	76,28
26-apr-2017	41,50	02-giu-2017	45,43	03-mag-2017	185,83	03-mag-2017	9,47	24-apr-2017	3,67	26-apr-2017	76,62
27-apr-2017	42,16	05-giu-2017	45,74	04-mag-2017	186,54	04-mag-2017	9,24	25-apr-2017	3,68	27-apr-2017	72,36
28-apr-2017	41,72	06-giu-2017	45,69	05-mag-2017	187,09	05-mag-2017	9,19	26-apr-2017	3,68	28-apr-2017	70,18
02-mag-2017	42,15	07-giu-2017	45,17	08-mag-2017	188,88	08-mag-2017	9,25	27-apr-2017	3,67	02-mag-2017	72,00
03-mag-2017	41,90	08-giu-2017	44,87	09-mag-2017	190,99	09-mag-2017	8,97	28-apr-2017	3,70	03-mag-2017	71,80
04-mag-2017	42,50	10-giu-2017	44,44	10-mag-2017	190,82	10-mag-2017	8,88	02-mag-2017	3,68	04-mag-2017	72,81
05-mag-2017	42,75	12-giu-2017	44,23	11-mag-2017	190,96	11-mag-2017	8,70	03-mag-2017	3,72	05-mag-2017	71,06
08-mag-2017	42,24	13-giu-2017	43,96	12-mag-2017	189,96	12-mag-2017	8,69	04-mag-2017	3,61	08-mag-2017	71,00
09-mag-2017	43,20	14-giu-2017	44,71	15-mag-2017	191,26	15-mag-2017	8,82	05-mag-2017	3,82	09-mag-2017	71,00
10-mag-2017	43,28	15-giu-2017	44,16	16-mag-2017	189,91	16-mag-2017	8,80	08-mag-2017	3,76	10-mag-2017	71,05
11-mag-2017	45,00	17-mag-2017	44,91	17-mag-2017	187,68	17-mag-2017	8,60	09-mag-2017	3,75	11-mag-2017	70,78
12-mag-2017	44,99	19-giu-2017	45,26	18-mag-2017	189,52	18-mag-2017	8,92	10-mag-2017	3,97	12-mag-2017	71,02
15-mag-2017	45,14	20-giu-2017	45,79	19-mag-2017	189,77	19-mag-2017	8,52	11-mag-2017	3,83	15-mag-2017	71,08
16-mag-2017	45,31	21-giu-2017	45,17	22-mag-2017	193,43	22-mag-2017	8,46	12-mag-2017	3,81	16-mag-2017	71,00
17-mag-2017	44,19	22-giu-2017	45,40	23-mag-2017	194,13	23-mag-2017	8,32	15-mag-2017	3,85	17-mag-2017	70,81
18-mag-2017	43,98	23-giu-2017	45,64	24-mag-2017	194,05	24-mag-2017	8,25	16-mag-2017	3,80	18-mag-2017	71,42
19-mag-2017	43,92	26-giu-2017	45,83	25-mag-2017	194,77	25-mag-2017	8,25	17-mag-2017	3,71	19-mag-2017	71,59
22-mag-2017	43,84	27-giu-2017	46,07	26-mag-2017	194,47	26-mag-2017	8,36	18-mag-2017	3,68	22-mag-2017	71,64
23-mag-2017	43,90	28-giu-2017	45,77	29-mag-2017	195,12	29-mag-2017	8,14	19-mag-2017	3,68	23-mag-2017	71,64
24-mag-2017	44,53	29-giu-2017	46,47	31-mag-2017	194,60	31-mag-2017	8,14	22-mag-2017	3,76	24-mag-2017	71,61
25-mag-2017	44,78	30-giu-2017	45,45	01-giu-2017	196,05	01-giu-2017	8,30	23-mag-2017	3,74	25-mag-2017	71,93
26-mag-2017	45,30	03-lug-2017	45,41	02-giu-2017	211,28	02-giu-2017	8,33	24-mag-2017	3,88	26-mag-2017	72,15
28-mag-2017	45,38	04-lug-2017	44,83	05-giu-2017	214,39	05-giu-2017	8,31	25-mag-2017	3,87	28-mag-2017	72,85
30-mag-2017	45,85	05-giu-2017	44,83	06-giu-2017	214,30	06-giu-2017	8,07	28-mag-2017	3,79	30-mag-2017	72,18
31-mag-2017	46,05	06-lug-2017	44,27	07-giu-2017	215,99	07-giu-2017	8,09	29-mag-2017	3,79	31-mag-2017	71,64
01-giu-2017	46,52	07-lug-2017	43,54	08-giu-2017	215,63	08-giu-2017	8,16	30-mag-2017	3,75	01-giu-2017	72,80
02-giu-2017	46,82	10-lug-2017	43,91	09-giu-2017	212,14	09-giu-2017	8,13	31-mag-2017	3,71	02-giu-2017	71,75
06-giu-2017	47,25	11-lug-2017	44,58	12-giu-2017	217,35	12-giu-2017	8,53	01-giu-2017	3,69	06-giu-2017	70,71
07-giu-2017	47,45	12-lug-2017	44,74	13-giu-2017	214,80	13-giu-2017	8,56	02-giu-2017	3,79	07-giu-2017	70,48
08-giu-2017	46,67	13-lug-2017	44,76	14-giu-2017	213,06	14-giu-2017	8,51	05-giu-2017	3,82	08-giu-2017	70,60
09-giu-2017	47,44	14-lug-2017	44,70	15-giu-2017	215,24	15-giu-2017	8,70	06-giu-2017	3,77	09-giu-2017	70,41
12-giu-2017	46,31	18-lug-2017	45,10	16-giu-2017	213,41	16-giu-2017	8,57	07-giu-2017	3,69	12-giu-2017	68,97
13-giu-2017	46,33	19-lug-2017	44,71	19-giu-2017	217,15	19-giu-2017	8,79	08-giu-2017	3,72	13-giu-2017	69,50
14-giu-2017	46,33	20-lug-2017	45,01	20-giu-2017	218,06	20-giu-2017	8,80	09-giu-2017	3,61	14-giu-2017	69,77
15-giu-2017	45,67	21-lug-2017	44,94	21-giu-2017	218,40	21-giu-2017	8,82	12-giu-2017	3,76	15-giu-2017	69,08
16-giu-2017	46,63	24-lug-2017	44,74	22-giu-2017	219,78	22-giu-2017	8,69	13-giu-2017	3,77	16-giu-2017	69,61
19-giu-2017	46,64	25-lug-2017	44,20	23-giu-2017	219,97	23-giu-2017	9,74	14-giu-2017	3,83	19-giu-2017	70,67
20-giu-2017	46,37	26-lug-2017	44,32	26-giu-2017	220,73	26-giu-2017	9,53	15-giu-2017	3,73	20-giu-2017	69,97
21-giu-2017	46,99	27-lug-2017	46,59	27-giu-2017	214,56	27-giu-2017	9,74	16-giu-2017	3,74	21-giu-2017	68,48
22-giu-2017	47,29	28-lug-2017	47,90	28-giu-2017	213,04	28-giu-2017	9,54	19-giu-2017	3,75	22-giu-2017	69,28
23-giu-2017	46,99	31-lug-2017	47,70	29-giu-2017	207,27	29-giu-2017	9,48	20-giu-2017	3,69	23-giu-2017	69,31
26-giu-2017	47,21	01-ago-2017	48,87	30-giu-2017	209,60	30-giu-2017	9,45	21-giu-2017	3,68	26-giu-2017	69,61
28-giu-2017	46,63	03-ago-2017	48,94	03-lug-2017	208,08	03-lug-2017	9,29	22-giu-2017	3,67	28-giu-2017	68,17
29-giu-2017	45,68	05-lug-2017	48,59	05-lug-2017	209,68	05-lug-2017	8,94	23-giu-2017	3,61	29-giu-2017	68,36
29-giu-2017	45,20	04-ago-2017	48,70	06-lug-2017	206,78	06-lug-2017	8,67	26-giu-2017	3,71	29-giu-2017	67,42
30-giu-2017	4										

02-oct-2017	44,98	13-nov-2017	46,13	10-oct-2017	198,18	10-oct-2017	11,27	28-set-2017	3,22	02-oct-2017	74,68
04-oct-2017	46,11	14-nov-2017	45,28	11-oct-2017	200,32	11-oct-2017	11,34	29-set-2017	3,15	04-oct-2017	75,38
05-oct-2017	45,04	15-nov-2017	44,24	12-oct-2017	200,52	12-oct-2017	11,37	02-oct-2017	3,15	05-oct-2017	75,00
06-oct-2017	46,00	16-nov-2017	44,15	13-oct-2017	199,63	13-oct-2017	11,29	03-oct-2017	3,15	06-oct-2017	73,84
09-oct-2017	45,74	17-nov-2017	44,58	16-oct-2017	200,89	16-oct-2017	11,49	04-oct-2017	3,16	09-oct-2017	73,69
10-oct-2017	46,84	20-nov-2017	44,38	17-oct-2017	200,56	17-oct-2017	11,09	05-oct-2017	3,15	10-oct-2017	73,60
11-oct-2017	45,29	21-nov-2017	44,07	18-oct-2017	200,03	18-oct-2017	10,82	06-oct-2017	3,11	11-oct-2017	73,82
12-oct-2017	45,43	22-nov-2017	44,32	19-oct-2017	199,22	19-oct-2017	10,51	09-oct-2017	3,06	12-oct-2017	74,08
13-oct-2017	45,40	24-nov-2017	43,81	20-oct-2017	199,74	20-oct-2017	10,99	10-oct-2017	3,07	13-oct-2017	74,57
16-oct-2017	45,55	27-nov-2017	43,45	23-oct-2017	202,02	23-oct-2017	10,85	11-oct-2017	3,10	16-oct-2017	74,15
17-oct-2017	45,96	28-nov-2017	42,16	24-oct-2017	203,72	24-oct-2017	10,89	12-oct-2017	3,04	17-oct-2017	73,63
18-oct-2017	45,77	29-nov-2017	41,99	25-oct-2017	201,41	25-oct-2017	11,01	13-oct-2017	3,04	18-oct-2017	73,77
19-oct-2017	45,43	30-nov-2017	40,63	26-oct-2017	206,36	26-oct-2017	11,28	16-oct-2017	3,09	19-oct-2017	72,92
20-oct-2017	44,87	01-dic-2017	41,48	27-oct-2017	210,57	27-oct-2017	11,59	17-oct-2017	2,99	20-oct-2017	73,20
23-oct-2017	45,00	04-dic-2017	40,73	30-oct-2017	208,39	30-oct-2017	11,29	18-oct-2017	2,98	23-oct-2017	74,40
24-oct-2017	44,85	05-dic-2017	40,45	31-oct-2017	206,34	31-oct-2017	11,38	19-oct-2017	2,93	24-oct-2017	75,51
25-oct-2017	45,00	06-dic-2017	39,63	01-nov-2017	201,40	01-nov-2017	11,28	20-oct-2017	2,94	25-oct-2017	75,43
26-oct-2017	45,41	07-dic-2017	39,69	02-nov-2017	194,66	02-nov-2017	11,11	23-oct-2017	3,05	26-oct-2017	77,47
27-oct-2017	46,41	08-dic-2017	41,94	03-nov-2017	197,53	03-nov-2017	10,86	24-oct-2017	3,05	27-oct-2017	75,87
30-oct-2017	45,76	11-dic-2017	42,29	06-nov-2017	196,09	06-nov-2017	11,76	25-oct-2017	3,00	30-oct-2017	75,25
01-nov-2017	46,04	12-dic-2017	41,69	07-nov-2017	197,96	07-nov-2017	11,91	26-oct-2017	2,97	01-nov-2017	76,11
02-nov-2017	45,27	13-dic-2017	41,83	08-nov-2017	198,81	08-nov-2017	11,77	27-oct-2017	2,93	02-nov-2017	76,21
03-nov-2017	45,07	14-dic-2017	42,12	09-nov-2017	199,27	09-nov-2017	11,67	30-oct-2017	2,98	03-nov-2017	73,77
06-nov-2017	45,99	15-dic-2017	41,85	10-nov-2017	196,40	10-nov-2017	12,82	31-oct-2017	3,03	06-nov-2017	73,21
07-nov-2017	46,26	18-dic-2017	42,82	13-nov-2017	203,23	13-nov-2017	13,07	01-nov-2017	2,99	07-nov-2017	71,70
08-nov-2017	47,47	19-dic-2017	42,51	14-nov-2017	200,73	14-nov-2017	12,89	02-nov-2017	2,94	08-nov-2017	72,23
09-nov-2017	47,21	20-dic-2017	42,90	15-nov-2017	199,02	15-nov-2017	13,02	03-nov-2017	2,92	09-nov-2017	71,30
10-nov-2017	48,24	21-dic-2017	42,71	16-nov-2017	203,46	16-nov-2017	13,13	06-nov-2017	2,91	10-nov-2017	72,91
13-nov-2017	48,34	22-dic-2017	42,48	17-nov-2017	202,37	17-nov-2017	13,82	07-nov-2017	2,89	13-nov-2017	71,71
14-nov-2017	48,00	25-dic-2017	42,65	20-nov-2017	204,52	20-nov-2017	13,94	08-nov-2017	2,84	14-nov-2017	72,28
15-nov-2017	47,05	26-dic-2017	42,32	21-nov-2017	204,58	21-nov-2017	14,23	09-nov-2017	2,83	15-nov-2017	71,62
16-nov-2017	47,03	27-dic-2017	42,16	22-nov-2017	202,11	22-nov-2017	14,00	10-nov-2017	2,63	16-nov-2017	72,31
17-nov-2017	45,84	29-dic-2017	41,97	24-nov-2017	203,09	24-nov-2017	13,97	13-nov-2017	2,87	17-nov-2017	72,13
20-nov-2017	47,04	29-dic-2017	41,64	27-nov-2017	204,51	27-nov-2017	14,00	14-nov-2017	2,46	20-nov-2017	72,33
21-nov-2017	48,39	04-gen-2018	42,47	28-nov-2017	205,47	28-nov-2017	14,11	15-nov-2017	2,42	21-nov-2017	73,86
22-nov-2017	48,80	05-gen-2018	43,36	29-nov-2017	204,77	29-nov-2017	14,69	16-nov-2017	2,47	22-nov-2017	73,77
23-nov-2017	49,20	09-gen-2018	43,62	30-nov-2017	202,64	30-nov-2017	14,58	17-nov-2017	2,49	23-nov-2017	73,64
24-nov-2017	49,11	09-gen-2018	42,88	09-dic-2017	200,27	09-dic-2017	14,28	20-nov-2017	2,45	24-nov-2017	73,72
27-nov-2017	49,20	11-gen-2018	42,25	04-dic-2017	193,65	04-dic-2017	14,03	21-nov-2017	2,51	27-nov-2017	73,99
28-nov-2017	49,25	12-gen-2018	41,33	05-dic-2017	196,12	05-dic-2017	14,08	22-nov-2017	2,45	28-nov-2017	73,65
29-nov-2017	48,75	15-gen-2018	41,58	06-dic-2017	198,45	06-dic-2017	14,16	23-nov-2017	2,45	29-nov-2017	73,42
30-nov-2017	49,70	16-gen-2018	41,55	07-dic-2017	202,87	07-dic-2017	14,31	24-nov-2017	2,44	30-nov-2017	73,29
01-dic-2017	49,86	17-gen-2018	41,80	08-dic-2017	192,59	08-dic-2017	13,79	27-nov-2017	2,42	01-dic-2017	73,01
04-dic-2017	51,14	18-gen-2018	42,25	11-dic-2017	194,13	11-dic-2017	13,60	28-nov-2017	2,44	04-dic-2017	73,47
05-dic-2017	51,25	19-gen-2018	41,96	12-dic-2017	195,62	12-dic-2017	13,63	29-nov-2017	2,50	05-dic-2017	73,94
06-dic-2017	50,89	22-gen-2018	41,79	13-dic-2017	189,59	13-dic-2017	13,53	30-nov-2017	2,46	06-dic-2017	73,97
07-dic-2017	51,47	23-gen-2018	42,01	14-dic-2017	188,33	14-dic-2017	13,54	01-dic-2017	2,68	07-dic-2017	74,30
08-dic-2017	51,42	24-gen-2018	42,85	15-dic-2017	195,12	15-dic-2017	13,66	04-dic-2017	2,59	08-dic-2017	74,00
11-dic-2017	52,14	25-gen-2018	42,04	18-dic-2017	190,19	18-dic-2017	13,71	05-dic-2017	2,60	11-dic-2017	73,91
12-dic-2017	52,43	26-gen-2018	42,38	19-dic-2017	189,12	19-dic-2017	13,52	06-dic-2017	2,60	12-dic-2017	73,69
13-dic-2017	53,09	29-gen-2018	42,74	20-dic-2017	189,24	20-dic-2017	13,61	07-dic-2017	2,64	13-dic-2017	73,70
14-dic-2017	52,67	30-gen-2018	42,62	21-dic-2017	186,79	21-dic-2017	13,43	08-dic-2017	2,68	14-dic-2017	73,46
15-dic-2017	52,01	31-gen-2018	41,07	22-dic-2017	185,37	22-dic-2017	13,28	11-dic-2017	2,61	15-dic-2017	73,45
18-dic-2017	52,62	01-feb-2018	40,14	26-dic-2017	185,90	26-dic-2017	13,58	12-dic-2017	2,66	18-dic-2017	74,23
19-dic-2017	51,66	02-feb-2018	40,55	27-dic-2017	186,09	27-dic-2017	13,59	13-dic-2017	2,63	19-dic-2017	74,95
20-dic-2017	51,27	05-feb-2018	41,14	28-dic-2017	184,39	28-dic-2017	13,32	14-dic-2017	2,65	20-dic-2017	73,94
21-dic-2017	51,49	06-feb-2018	39,03	29-dic-2017	181,63	29-dic-2017	12,92	15-dic-2017	2,55	21-dic-2017	73,94
22-dic-2017	51,32	07-feb-2018	40,44	02-gen-2018	182,98	02-gen-2018	13,19	16-dic-2017	2,55	22-dic-2017	73,59
27-dic-2017	51,82	08-feb-2018	41,24	03-gen-2018	188,76	03-gen-2018	12,99	19-dic-2017	2,55	27-dic-2017	73,75
28-dic-2017	51,60	09-feb-2018	40,66	04-gen-2018	185,26	04-gen-2018	12,97	20-dic-2017	2,58	28-dic-2017	73,56
29-dic-2017	51,76	13-feb-2018	40,71	05-gen-2018	191,64	05-gen-2018	13,14	21-dic-2017	2,60	29-dic-2017	73,52
01-gen-2018	51,40	14-feb-2018	40,00	09-dic-2017	193,61	09-dic-2017	13,50	22-dic-2017	2,61	01-gen-2018	73,80
03-gen-2018	52,10	15-feb-2018	40,86	09-gen-2018	196,27	09-gen-2018	13,82	27-dic-2017	2,62	03-gen-2018	74,10
04-gen-2018	52,55	16-feb-2018	41,24	10-gen-2018	193,38	10-gen-2018	13,44	28-dic-2017	2,64	04-gen-2018	73,90
05-gen-2018	53,10	19-feb-2018	42,25	11-gen-2018	190,04	11-gen-2018	13,42	29-dic-2017	2,66	05-gen-2018	74,50
06-gen-2018	53,60	20-feb-2018	41,77	12-gen-2018	189,45	12-gen-2018	13,30	02-gen-2018	2,67	06-gen-2018	74,25
08-gen-2018	53,86	21-feb-2018	41,82	16-gen-2018	188,40	16-gen-2018	13,64	03-gen-2018	2,71	08-gen-2018	74,10
10-gen-2018	53,60	22-feb-2018	41,51	17-gen-2018	193,03	17-gen-2018	12,89	04-gen-2018	2,86	10-gen-2018	73,20
11-gen-2018	54,40	23-feb-2018	41,00	18-gen-2018	192,46	18-gen-2018	12,99	05-gen-2018	2,84	11-gen-2018	72,70
12-gen-2018	52,30	26-feb-2018	41,85	19-gen-2018	196,93	19-gen-2018	13,26	08-gen-2018	2,81	12-gen-2018	72,35
15-gen-2018	51,75	27-feb-2018	43,15	22-gen-2018	196,83	22-gen-2018	13,01	09-gen-2018	2,94	15-gen-2018	72,35
16-gen-2018	51,40	28-feb-2018	43,80	23-gen-2018	194,11	23-gen-2018	13,10	10-gen-2018	2,80	16-gen-2018	72,50
17-gen-2018	51,70	01-mar-2018	42,51	24-gen-2018	192,91	24-gen-2018	12,66	11-gen-2018	2,89	17-gen-2018	72,35
18-gen-2018	52,30	02-mar-2018	40,91	25-gen-2018	196,68	25-gen-2018	12,75	12-gen-2018	2,93	18-gen-2018	72,35
19-gen-2018	53,25	05-mar-2018	40,31	26-gen-2018	197,75	26-gen-2018	13,25	15-gen-2018	2,92	19-gen-2018	73,05
22-gen-2018	52,45	06-mar-2018	40,84	29-gen-2018	196,75	29-gen-2018	13,04	16-gen-2018	2,88	22-gen-2018	73,50
23-gen-2018	52,35	07-mar-2018	40,76	30-gen-2018	190,85	30-gen-2018	12,86	17-gen-2018	2,81	23-gen-2018	73,50
24-gen-2018	52,40	08-mar-2018	41,37	31-gen-2018	197,00	31-gen-2018	12,64	18-gen-2018	2,76	24-gen-2018	71,45
25-gen-2018	52,35	09-mar-2018	41,80	01-feb-2018	194,76	01-feb-2018	12,35	19-gen-2018	2,74	25-gen-2018	70,95
26-gen-2018	53,35	12-mar-2018	42,34	02-feb-2018	193,68	02-feb-2018	12,28	22-gen-2018	2,82	26-gen-2018	70,95
29-gen-2018	53,00	13-mar-2018	43,26	05-feb-2018	196,78	05-feb-2018	12,37	23-gen-2018	2,82	29-gen-2018	71,40
30-gen-2018	52,35	14-mar-2018	43,67	06-feb-2018	195,26	06-feb-2018	12,56	24-gen-2018	2,84	30-gen-2018	70,90
31-gen-2018	52,75	15-mar-2018	43,58	07-feb-2018	187,96	07-feb-2018	12,64	25-gen-2018	2,83	31-gen-2018	70,50
01-feb-2018	52,05	16-mar-2018	43,43	08-feb-2018	182,25	08-feb-2018	12,21	26-gen-2018			

02-mag-2018	57,45	15-giu-2018	50,08	08-mag-2018	191,20	08-mag-2018	18,80	25-apr-2018	2,32	02-mag-2018	68,85
03-mag-2018	57,10	18-giu-2018	49,59	09-mag-2018	191,13	09-mag-2018	18,86	26-apr-2018	2,35	03-mag-2018	69,00
04-mag-2018	57,15	19-giu-2018	48,86	10-mag-2018	190,26	10-mag-2018	20,40	27-apr-2018	2,38	04-mag-2018	69,55
07-mag-2018	58,95	20-giu-2018	49,16	11-mag-2018	196,21	11-mag-2018	19,97	30-apr-2018	2,32	07-mag-2018	69,65
08-mag-2018	57,35	21-giu-2018	49,85	14-mag-2018	197,21	14-mag-2018	19,83	02-mag-2018	2,39	08-mag-2018	70,45
09-mag-2018	57,60	22-giu-2018	49,62	15-mag-2018	196,20	15-mag-2018	20,32	03-mag-2018	2,41	09-mag-2018	70,30
10-mag-2018	58,15	25-giu-2018	49,50	16-mag-2018	196,11	16-mag-2018	21,72	04-mag-2018	2,47	10-mag-2018	70,95
11-mag-2018	57,30	26-giu-2018	49,80	17-mag-2018	195,72	17-mag-2018	22,17	07-mag-2018	2,47	11-mag-2018	69,15
14-mag-2018	57,80	27-giu-2018	49,72	18-mag-2018	198,14	18-mag-2018	22,38	08-mag-2018	2,43	14-mag-2018	69,30
15-mag-2018	57,00	28-giu-2018	49,31	21-mag-2018	200,59	21-mag-2018	22,56	09-mag-2018	2,44	15-mag-2018	68,90
16-mag-2018	57,00	29-giu-2018	48,72	22-mag-2018	197,01	22-mag-2018	22,54	10-mag-2018	2,63	16-mag-2018	68,65
17-mag-2018	57,25	02-lug-2018	49,04	23-mag-2018	198,29	23-mag-2018	23,20	11-mag-2018	2,53	17-mag-2018	68,70
18-mag-2018	57,30	03-lug-2018	48,22	24-mag-2018	198,91	24-mag-2018	23,65	14-mag-2018	2,46	18-mag-2018	68,80
22-mag-2018	58,05	04-lug-2018	47,82	25-mag-2018	195,49	25-mag-2018	24,12	15-mag-2018	2,41	22-mag-2018	69,75
23-mag-2018	57,90	05-lug-2018	47,20	29-mag-2018	194,57	29-mag-2018	25,00	16-mag-2018	2,38	23-mag-2018	68,55
24-mag-2018	58,50	06-lug-2018	46,79	30-mag-2018	197,01	30-mag-2018	25,08	17-mag-2018	2,41	24-mag-2018	68,55
25-mag-2018	60,25	08-lug-2018	47,42	31-mag-2018	193,59	31-mag-2018	25,45	18-mag-2018	2,42	25-mag-2018	69,10
28-mag-2018	61,25	09-lug-2018	47,45	01-giu-2018	195,63	01-giu-2018	25,99	21-mag-2018	2,43	28-mag-2018	68,75
29-mag-2018	59,95	11-lug-2018	47,23	04-giu-2018	193,45	04-giu-2018	25,90	22-mag-2018	2,47	29-mag-2018	67,55
30-mag-2018	58,70	12-lug-2018	47,23	05-giu-2018	191,93	05-giu-2018	26,59	23-mag-2018	2,51	30-mag-2018	68,00
31-mag-2018	59,15	13-lug-2018	48,36	06-giu-2018	194,45	06-giu-2018	25,95	24-mag-2018	2,53	31-mag-2018	67,90
01-giu-2018	58,30	17-lug-2018	49,00	07-giu-2018	192,00	07-giu-2018	24,84	25-mag-2018	2,48	01-giu-2018	68,05
03-giu-2018	59,00	18-lug-2018	48,00	08-giu-2018	197,36	08-giu-2018	25,03	28-mag-2018	2,39	03-giu-2018	68,50
05-giu-2018	59,55	19-lug-2018	49,96	11-giu-2018	188,40	11-giu-2018	24,70	29-mag-2018	2,34	05-giu-2018	69,10
06-giu-2018	60,55	20-lug-2018	50,21	12-giu-2018	194,16	12-giu-2018	25,38	30-mag-2018	2,34	06-giu-2018	69,50
07-giu-2018	59,95	23-lug-2018	50,43	13-giu-2018	192,41	13-giu-2018	25,02	31-mag-2018	2,44	07-giu-2018	68,65
08-giu-2018	60,45	24-lug-2018	50,25	14-lug-2018	203,23	14-lug-2018	25,76	01-giu-2018	2,42	08-giu-2018	68,85
11-giu-2018	61,35	25-lug-2018	50,17	15-lug-2018	204,21	15-lug-2018	26,00	04-giu-2018	2,40	11-giu-2018	69,70
12-giu-2018	61,20	26-lug-2018	50,98	18-lug-2018	201,86	18-lug-2018	25,34	05-giu-2018	2,40	12-giu-2018	70,15
13-giu-2018	61,55	27-lug-2018	51,61	19-giu-2018	201,54	19-giu-2018	25,37	06-giu-2018	2,41	13-giu-2018	70,60
14-giu-2018	62,15	31-lug-2018	51,41	20-giu-2018	200,38	20-giu-2018	28,22	07-giu-2018	2,34	14-giu-2018	71,45
15-giu-2018	61,45	30-lug-2018	51,23	21-giu-2018	201,69	21-giu-2018	27,11	08-giu-2018	2,31	15-giu-2018	71,20
18-giu-2018	61,25	01-ago-2018	50,84	22-giu-2018	203,54	22-giu-2018	26,97	11-giu-2018	2,36	18-giu-2018	69,70
19-giu-2018	59,90	02-ago-2018	50,44	25-giu-2018	199,96	25-giu-2018	25,94	12-giu-2018	2,44	19-giu-2018	70,00
20-giu-2018	60,75	03-ago-2018	53,28	26-giu-2018	201,64	26-giu-2018	26,49	13-giu-2018	2,51	20-giu-2018	70,20
21-giu-2018	60,55	06-ago-2018	52,56	27-giu-2018	201,26	27-giu-2018	25,71	14-giu-2018	2,49	21-giu-2018	70,05
22-giu-2018	59,75	07-ago-2018	51,47	28-giu-2018	202,98	28-giu-2018	26,80	15-giu-2018	2,49	22-giu-2018	70,80
25-giu-2018	59,75	08-ago-2018	50,81	29-giu-2018	201,53	29-giu-2018	25,92	18-giu-2018	2,52	25-giu-2018	69,50
26-giu-2018	59,25	09-ago-2018	51,12	02-lug-2018	203,02	02-lug-2018	27,02	19-giu-2018	2,56	26-giu-2018	68,95
27-giu-2018	58,95	10-ago-2018	50,61	03-lug-2018	204,34	03-lug-2018	26,81	20-giu-2018	2,53	27-giu-2018	68,00
28-giu-2018	57,95	13-ago-2018	49,41	05-lug-2018	204,57	05-lug-2018	27,59	21-giu-2018	2,58	28-giu-2018	59,10
29-giu-2018	58,45	14-ago-2018	50,91	06-lug-2018	206,64	06-lug-2018	27,54	22-giu-2018	2,56	29-giu-2018	59,30
02-lug-2018	59,20	15-ago-2018	50,28	09-lug-2018	208,51	09-lug-2018	27,32	25-giu-2018	2,52	02-lug-2018	57,55
03-lug-2018	60,10	16-ago-2018	50,59	10-lug-2018	208,90	10-lug-2018	27,25	26-giu-2018	2,48	03-lug-2018	56,45
04-lug-2018	61,15	17-ago-2018	51,27	11-lug-2018	211,67	11-lug-2018	27,16	27-giu-2018	2,42	04-lug-2018	55,30
05-lug-2018	61,40	20-ago-2018	51,40	12-lug-2018	210,64	12-lug-2018	27,68	28-giu-2018	2,46	05-lug-2018	57,65
06-lug-2018	62,20	21-ago-2018	50,54	13-lug-2018	211,49	13-lug-2018	27,77	29-giu-2018	2,50	06-lug-2018	58,05
09-lug-2018	61,50	22-ago-2018	50,94	16-lug-2018	207,28	16-lug-2018	27,88	02-lug-2018	2,45	09-lug-2018	58,15
10-lug-2018	63,35	23-ago-2018	50,91	17-lug-2018	211,06	17-lug-2018	29,08	03-lug-2018	2,45	10-lug-2018	57,90
11-lug-2018	62,90	24-ago-2018	50,87	18-lug-2018	212,05	18-lug-2018	29,00	04-lug-2018	2,51	11-lug-2018	57,70
12-lug-2018	64,90	27-ago-2018	50,61	19-lug-2018	213,03	19-lug-2018	29,12	05-lug-2018	2,42	12-lug-2018	57,95
13-lug-2018	64,00	28-ago-2018	50,51	20-lug-2018	212,14	20-lug-2018	28,93	06-lug-2018	2,46	13-lug-2018	57,30
15-lug-2018	64,80	29-ago-2018	50,40	23-lug-2018	214,08	23-lug-2018	29,26	09-lug-2018	2,46	15-lug-2018	57,50
17-lug-2018	65,90	30-ago-2018	50,09	24-lug-2018	214,75	24-lug-2018	29,23	10-lug-2018	2,41	17-lug-2018	57,35
18-lug-2018	66,80	31-ago-2018	50,45	25-lug-2018	217,42	25-lug-2018	29,80	11-lug-2018	2,35	18-lug-2018	58,85
19-lug-2018	66,00	03-set-2018	50,50	26-lug-2018	219,50	26-lug-2018	29,89	12-lug-2018	2,38	19-lug-2018	59,45
20-lug-2018	66,75	04-set-2018	51,05	27-lug-2018	217,91	27-lug-2018	27,84	13-lug-2018	2,41	20-lug-2018	59,20
23-lug-2018	65,95	05-set-2018	49,92	30-lug-2018	215,69	30-lug-2018	28,97	16-lug-2018	2,43	23-lug-2018	59,90
24-lug-2018	66,70	06-set-2018	49,05	31-lug-2018	222,82	31-lug-2018	26,39	17-lug-2018	2,44	24-lug-2018	60,85
25-lug-2018	67,10	07-set-2018	49,48	01-ago-2018	222,19	01-ago-2018	27,36	18-lug-2018	2,35	25-lug-2018	60,25
26-lug-2018	67,15	10-set-2018	48,80	02-ago-2018	224,80	02-ago-2018	33,46	19-lug-2018	2,36	26-lug-2018	60,70
27-lug-2018	67,20	11-set-2018	47,92	03-ago-2018	225,05	03-ago-2018	32,77	20-lug-2018	2,38	27-lug-2018	61,10
30-lug-2018	67,20	12-set-2018	48,86	06-ago-2018	223,70	06-ago-2018	34,58	23-lug-2018	2,38	30-lug-2018	60,20
31-lug-2018	66,45	13-set-2018	48,93	07-ago-2018	222,03	07-ago-2018	34,41	24-lug-2018	2,37	31-lug-2018	60,05
01-ago-2018	67,90	14-set-2018	50,58	08-ago-2018	222,18	08-ago-2018	33,55	25-lug-2018	2,36	01-ago-2018	59,65
02-ago-2018	67,60	18-set-2018	50,68	09-ago-2018	222,83	09-ago-2018	34,36	26-lug-2018	2,40	02-ago-2018	60,05
03-ago-2018	67,65	19-set-2018	50,43	10-set-2018	221,86	10-set-2018	34,01	27-lug-2018	2,37	03-ago-2018	60,20
06-ago-2018	68,90	20-set-2018	49,89	13-ago-2018	221,94	13-ago-2018	34,76	30-lug-2018	2,41	06-ago-2018	61,00
07-ago-2018	67,85	21-set-2018	49,29	14-ago-2018	224,80	14-ago-2018	37,47	31-lug-2018	2,45	07-ago-2018	60,90
08-ago-2018	68,65	25-set-2018	50,01	15-ago-2018	223,18	15-ago-2018	36,67	01-ago-2018	2,41	08-ago-2018	61,15
09-ago-2018	69,35	26-set-2018	50,94	16-ago-2018	224,72	16-ago-2018	36,26	02-ago-2018	2,41	09-ago-2018	61,40
10-ago-2018	71,15	27-set-2018	51,27	17-ago-2018	225,26	17-ago-2018	35,89	03-ago-2018	2,38	10-ago-2018	60,75
13-ago-2018	73,80	28-set-2018	51,15	20-ago-2018	223,07	20-ago-2018	36,89	06-ago-2018	2,26	13-ago-2018	59,90
14-ago-2018	73,00	01-ott-2018	51,24	21-ago-2018	221,94	21-ago-2018	37,34	07-ago-2018	2,23	14-ago-2018	59,40
15-ago-2018	72,00	02-ott-2018	52,24	22-ago-2018	223,81	22-ago-2018	37,86	08-ago-2018	2,21	15-ago-2018	58,80
16-ago-2018	71,85	03-ott-2018	52,22	23-ago-2018	224,68	23-ago-2018	38,79	09-ago-2018	2,17	16-ago-2018	59,30
17-ago-2018	71,90	04-ott-2018	52,39	24-ago-2018	223,72	24-ago-2018	38,65	10-ago-2018	2,10	17-ago-2018	58,70
20-ago-2018	73,15	05-ott-2018	52,21	27-ago-2018	224,23	27-ago-2018	38,79	13-ago-2018	2,10	20-ago-2018	58,45
21-ago-2018	73,90	09-ott-2018	50,16	28-ago-2018	225,41	28-ago-2018	38,57	14-ago-2018	2,09	21-ago-2018	59,00
22-ago-2018	75,20	10-ott-2018	50,61	29-ago-2018	226,90	29-ago-2018	39,94	16-ago-2018	2,00	22-ago-2018	58,35
23-ago-2018	74,60	11-ott-2018	47,85	30-ago-2018	225,96	30-ago-2018	40,75	17-ago-2018	1,99	23-ago-2018	58,45
24-ago-2018	74,10	12-ott-2018	47,64	31-ago-2018	220,52	31-ago-2018	40,52	20-ago-2018	1,92	24-ago-2018	58,40
27-ago-2018	73,60	15-ott-2018	47,15	01-set-2018	221,64	01-set-2018	42,66	21-ago-2018	1,94	27-ago-2018	59,15

30-nov-2018	61,00	28-gen-2019	49,79	11-dic-2018	225,18	11-dic-2018	31,12	23-nov-2018	0,83	30-nov-2018	55,35
03-dic-2018	62,15	29-gen-2019	49,95	12-dic-2018	224,08	12-dic-2018	31,90	26-nov-2018	0,83	03-dic-2018	55,30
04-dic-2018	67,90	30-gen-2019	49,71	13-dic-2018	228,11	13-dic-2018	31,91	27-nov-2018	0,84	04-dic-2018	56,30
05-dic-2018	66,45	31-gen-2019	50,55	14-dic-2018	221,08	14-dic-2018	30,43	28-nov-2018	0,88	05-dic-2018	55,55
06-dic-2018	66,10	01-feb-2019	53,15	17-dic-2018	215,46	17-dic-2018	29,53	29-nov-2018	0,86	06-dic-2018	55,00
07-dic-2018	66,70	04-feb-2019	52,27	18-dic-2018	217,60	18-dic-2018	29,00	30-nov-2018	0,78	07-dic-2018	54,85
10-dic-2018	67,85	05-feb-2019	52,36	19-dic-2018	214,14	19-dic-2018	28,60	03-dic-2018	0,76	10-dic-2018	54,40
11-dic-2018	69,35	06-feb-2019	53,32	20-dic-2018	208,90	20-dic-2018	26,53	04-dic-2018	0,77	11-dic-2018	55,30
12-dic-2018	71,05	07-feb-2019	52,93	21-dic-2018	208,13	21-dic-2018	26,12	05-dic-2018	0,73	12-dic-2018	55,55
13-dic-2018	71,70	08-feb-2019	52,89	24-dic-2018	204,14	24-dic-2018	25,36	06-dic-2018	0,75	13-dic-2018	56,25
14-dic-2018	71,30	12-feb-2019	53,95	26-dic-2018	215,48	26-dic-2018	27,40	07-dic-2018	0,76	14-dic-2018	55,75
17-dic-2018	70,90	13-feb-2019	53,22	27-dic-2018	220,65	27-dic-2018	27,07	10-dic-2018	0,73	17-dic-2018	54,95
18-dic-2018	70,55	14-feb-2019	53,67	28-dic-2018	213,30	28-dic-2018	27,33	11-dic-2018	0,73	18-dic-2018	54,80
19-dic-2018	70,90	15-feb-2019	53,59	31-dic-2018	221,90	31-dic-2018	27,82	12-dic-2018	0,69	19-dic-2018	54,85
20-dic-2018	69,35	18-feb-2019	54,29	02-gen-2019	220,98	02-gen-2019	27,43	13-dic-2018	0,74	20-dic-2018	54,25
21-dic-2018	68,95	19-feb-2019	54,75	03-gen-2019	216,10	03-gen-2019	24,41	14-dic-2018	0,64	21-dic-2018	54,05
27-dic-2018	68,25	20-feb-2019	53,88	04-gen-2019	216,09	04-gen-2019	25,82	17-dic-2018	0,63	27-dic-2018	53,45
28-dic-2018	69,35	21-feb-2019	54,31	05-gen-2019	215,07	05-gen-2019	27,01	18-dic-2018	0,65	28-dic-2018	54,00
02-gen-2019	69,85	22-feb-2019	53,92	06-gen-2019	221,88	06-gen-2019	28,08	19-dic-2018	0,65	02-gen-2019	55,40
03-gen-2019	68,50	25-feb-2019	54,61	09-gen-2019	223,78	09-gen-2019	28,25	20-dic-2018	0,64	03-gen-2019	56,20
04-gen-2019	70,75	26-feb-2019	53,69	10-gen-2019	225,81	10-gen-2019	28,27	21-dic-2018	0,64	04-gen-2019	56,45
07-gen-2019	72,60	27-feb-2019	53,80	11-gen-2019	228,04	11-gen-2019	27,86	27-dic-2018	0,63	07-gen-2019	55,30
08-gen-2019	74,20	28-feb-2019	53,74	12-gen-2019	227,11	12-gen-2019	26,89	28-dic-2018	0,63	08-gen-2019	56,25
09-gen-2019	74,80	01-mar-2019	54,27	15-gen-2019	235,40	15-gen-2019	27,92	02-gen-2019	0,73	09-gen-2019	57,45
10-gen-2019	74,00	04-mar-2019	57,32	16-gen-2019	238,79	16-gen-2019	29,10	03-gen-2019	0,70	10-gen-2019	57,15
11-gen-2019	74,00	05-mar-2019	57,79	17-gen-2019	234,75	17-gen-2019	30,29	04-gen-2019	0,73	11-gen-2019	56,55
14-gen-2019	73,85	06-mar-2019	57,53	18-gen-2019	237,33	18-gen-2019	30,95	07-gen-2019	0,74	14-gen-2019	55,85
15-gen-2019	74,75	07-mar-2019	57,20	19-gen-2019	238,53	19-gen-2019	32,81	08-gen-2019	0,73	15-gen-2019	55,45
16-gen-2019	74,90	08-mar-2019	56,72	23-gen-2019	236,21	23-gen-2019	29,63	09-gen-2019	0,76	16-gen-2019	55,85
17-gen-2019	74,70	11-mar-2019	56,41	24-gen-2019	240,57	24-gen-2019	30,23	10-gen-2019	0,73	17-gen-2019	55,80
18-gen-2019	75,15	12-mar-2019	57,47	25-gen-2019	241,51	25-gen-2019	31,27	11-gen-2019	0,70	18-gen-2019	56,40
21-gen-2019	77,90	13-mar-2019	57,24	28-gen-2019	239,34	28-gen-2019	30,66	14-gen-2019	0,71	21-gen-2019	56,55
22-gen-2019	78,35	14-mar-2019	57,65	29-gen-2019	239,51	29-gen-2019	32,19	15-gen-2019	0,69	22-gen-2019	57,70
23-gen-2019	79,95	15-mar-2019	58,31	30-gen-2019	241,14	30-gen-2019	30,23	16-gen-2019	0,69	23-gen-2019	56,85
24-gen-2019	79,20	18-mar-2019	58,59	31-gen-2019	243,59	31-gen-2019	31,22	17-gen-2019	0,68	24-gen-2019	57,70
25-gen-2019	78,55	19-mar-2019	58,48	01-feb-2019	242,47	01-feb-2019	31,16	18-gen-2019	0,67	25-gen-2019	58,55
28-gen-2019	78,55	20-mar-2019	57,94	04-feb-2019	242,45	04-feb-2019	31,34	21-gen-2019	0,65	28-gen-2019	58,20
29-gen-2019	78,60	22-mar-2019	59,43	05-feb-2019	243,47	05-feb-2019	32,63	22-gen-2019	0,67	29-gen-2019	59,05
30-gen-2019	78,40	25-mar-2019	58,67	06-feb-2019	243,36	06-feb-2019	30,67	23-gen-2019	0,67	30-gen-2019	59,20
31-gen-2019	79,15	26-mar-2019	59,24	07-feb-2019	240,58	07-feb-2019	29,67	24-gen-2019	0,67	31-gen-2019	59,25
01-feb-2019	78,45	27-mar-2019	59,70	08-feb-2019	243,71	08-feb-2019	30,08	25-gen-2019	0,68	01-feb-2019	59,35
04-feb-2019	81,15	28-mar-2019	58,99	11-feb-2019	244,11	11-feb-2019	31,44	28-gen-2019	0,67	04-feb-2019	59,70
05-feb-2019	82,40	29-mar-2019	59,79	12-feb-2019	245,58	12-feb-2019	32,19	29-gen-2019	0,69	05-feb-2019	60,65
06-feb-2019	82,60	01-apr-2019	59,92	13-feb-2019	246,78	13-feb-2019	32,62	30-gen-2019	0,70	06-feb-2019	60,60
07-feb-2019	81,95	02-apr-2019	60,81	14-feb-2019	244,28	14-feb-2019	31,13	31-gen-2019	0,70	07-feb-2019	60,20
08-feb-2019	81,35	03-apr-2019	61,33	15-feb-2019	247,12	15-feb-2019	32,25	01-feb-2019	0,69	08-feb-2019	58,90
11-feb-2019	82,15	04-apr-2019	61,18	18-feb-2019	249,83	18-feb-2019	32,68	04-feb-2019	0,69	11-feb-2019	59,50
12-feb-2019	82,40	05-apr-2019	60,18	20-feb-2019	251,10	20-feb-2019	32,37	05-feb-2019	0,68	12-feb-2019	59,40
13-feb-2019	80,95	08-apr-2019	59,84	21-feb-2019	252,63	21-feb-2019	32,55	06-feb-2019	0,69	13-feb-2019	58,95
14-feb-2019	77,45	09-apr-2019	60,74	22-feb-2019	257,99	22-feb-2019	32,15	07-feb-2019	0,68	14-feb-2019	59,25
15-feb-2019	77,30	10-apr-2019	61,05	25-feb-2019	259,38	25-feb-2019	33,44	08-feb-2019	0,66	15-feb-2019	59,20
18-feb-2019	77,25	11-apr-2019	60,51	26-feb-2019	253,62	26-feb-2019	31,85	11-feb-2019	0,66	18-feb-2019	59,80
19-feb-2019	77,35	12-apr-2019	60,18	27-feb-2019	252,46	27-feb-2019	32,63	12-feb-2019	0,66	19-feb-2019	59,80
20-feb-2019	77,10	15-apr-2019	60,16	28-feb-2019	251,53	28-feb-2019	32,37	13-feb-2019	0,66	20-feb-2019	59,90
21-feb-2019	76,70	16-apr-2019	60,12	01-mar-2019	255,56	01-mar-2019	35,85	14-feb-2019	0,66	21-feb-2019	59,70
22-feb-2019	76,70	17-apr-2019	60,15	04-mar-2019	253,90	04-mar-2019	34,60	15-feb-2019	0,66	22-feb-2019	60,20
25-feb-2019	75,10	18-apr-2019	59,10	05-mar-2019	256,70	05-mar-2019	34,33	18-feb-2019	0,66	25-feb-2019	59,60
26-feb-2019	76,20	19-apr-2019	59,16	06-mar-2019	250,12	06-mar-2019	33,00	19-feb-2019	0,65	26-feb-2019	60,95
27-feb-2019	74,50	22-apr-2019	59,65	07-mar-2019	257,68	07-mar-2019	33,03	20-feb-2019	0,66	27-feb-2019	59,10
28-feb-2019	75,00	23-apr-2019	60,12	08-mar-2019	256,36	08-mar-2019	32,40	21-feb-2019	0,67	28-feb-2019	59,35
01-mar-2019	75,60	24-apr-2019	60,60	11-mar-2019	256,79	11-mar-2019	32,84	22-feb-2019	0,72	01-mar-2019	59,55
02-mar-2019	76,80	25-apr-2019	61,45	12-mar-2019	259,63	12-mar-2019	32,95	25-feb-2019	0,69	02-mar-2019	59,60
05-mar-2019	77,60	26-apr-2019	61,85	13-mar-2019	257,93	13-mar-2019	32,91	28-feb-2019	0,68	05-mar-2019	60,15
06-mar-2019	77,40	07-mag-2019	65,88	14-mar-2019	260,85	14-mar-2019	31,84	27-feb-2019	0,67	06-mar-2019	59,50
07-mar-2019	77,45	08-mag-2019	62,37	15-mar-2019	260,69	15-mar-2019	32,30	28-feb-2019	0,68	07-mar-2019	59,55
08-mar-2019	76,35	09-mag-2019	62,56	18-mar-2019	258,63	18-mar-2019	32,05	01-mar-2019	0,69	08-mar-2019	59,00
11-mar-2019	77,60	10-mag-2019	62,54	19-mar-2019	259,56	19-mar-2019	32,73	04-mar-2019	0,69	11-mar-2019	60,25
12-mar-2019	77,50	13-mag-2019	62,95	20-mar-2019	255,20	20-mar-2019	33,27	05-mar-2019	0,69	12-mar-2019	60,25
13-mar-2019	78,15	14-mag-2019	62,98	21-mar-2019	261,37	21-mar-2019	34,64	06-mar-2019	0,70	13-mar-2019	59,85
14-mar-2019	78,00	15-mag-2019	64,37	22-mar-2019	257,90	22-mar-2019	33,30	07-mar-2019	0,68	14-mar-2019	59,90
15-mar-2019	78,70	16-mag-2019	65,14	25-mar-2019	258,43	25-mar-2019	33,21	08-mar-2019	0,67	15-mar-2019	60,15
18-mar-2019	78,10	17-mag-2019	65,22	26-mar-2019	261,10	26-mar-2019	34,13	11-mar-2019	0,67	18-mar-2019	59,60
19-mar-2019	79,15	20-mag-2019	64,23	27-mar-2019	260,38	27-mar-2019	31,43	12-mar-2019	0,68	19-mar-2019	59,95
20-mar-2019	77,50	21-mag-2019	63,59	28-mar-2019	262,90	28-mar-2019	32,04	13-mar-2019	0,70	20-mar-2019	59,40
21-mar-2019	77,70	22-mag-2019	62,49	29-mar-2019	264,04	29-mar-2019	30,48	14-mar-2019	0,67	21-mar-2019	59,75
22-mar-2019	76,65	23-mag-2019	63,38	01-apr-2019	263,84	01-apr-2019	30,51	15-mar-2019	0,66	22-mar-2019	59,35
25-mar-2019	77,65	24-mag-2019	63,32	02-apr-2019	265,66	02-apr-2019	31,28	18-mar-2019	0,65	25-mar-2019	59,65
26-mar-2019	78,25	27-mag-2019	63,53	03-apr-2019	264,44	03-apr-2019	30,75	19-mar-2019	0,65	26-mar-2019	59,90
27-mar-2019	78,65	28-mag-2019	65,06	04-apr-2019	259,12	04-apr-2019	30,62	20-mar-2019	0,65	27-mar-2019	60,45
28-mar-2019	80,35	29-mag-2019	64,53	05-apr-2019	258,11	05-apr-2019	31,21	21-mar-2019	0,65	28-mar-2019	60,35
29-mar-2019	74,45	30-mag-2019	62,62	08-apr-2019	257,60	08-apr-2019	30,98	22-mar-2019	0,64	29-mar-2019	61,50
01-apr-2019	74,90	31-mag-2019	62,54	09-apr-2019	257,05	09-apr-2019	31,28	25-mar-2019	0,65	01-apr-2019	60,95
02-apr-2019	74,60	03-giu-2019	60,65	10-apr-2019	258,74	10-apr-2019	32,83	26-mar-2019	0,65	02-apr-2019	61,25
03-apr-2019	73,85	04-giu-2019	59,89	11-apr-2019	259,45	11-apr-2019	32,60	27-mar-2019	0,64	03-apr-2019	61,65
04-apr-2019	72,65	05-giu-2019	63,23	12-apr-2019							

Volatility: Comparables' Returns

Return						
Carl Zeiss Meditec AG	Hoya Corp	Cooper Companies Inc	STAAR Surgical Co	Safilo Group SpA	Fielmann Group AG	
-0.90%	0.57%	-0.33%	-1.24%	-2.40%	-2.85%	
-0.95%	-1.14%	0.28%	-0.19%	0.78%	-0.38%	
0.45%	3.03%	-0.41%	4.29%	1.19%	-0.05%	
-0.14%	0.01%	1.84%	0.58%	-0.65%	0.48%	
-0.07%	-1.17%	0.23%	1.85%	0.41%	0.63%	
0.00%	0.47%	-0.13%	2.05%	-2.18%	0.29%	
-0.23%	0.52%	0.46%	2.55%	-0.90%	0.05%	
0.73%	-0.67%	-1.33%	-1.72%	-1.28%	0.00%	
0.14%	-0.40%	-0.55%	-2.04%	-3.51%	-1.71%	
-0.56%	0.54%	0.86%	2.49%	-1.66%	-0.82%	
0.33%	0.39%	2.64%	-0.16%	0.97%	1.47%	
-0.54%	3.33%	-0.61%	1.97%	0.00%	0.43%	
-0.35%	0.23%	0.70%	3.59%	2.51%	0.00%	
-2.61%	1.21%	0.91%	-1.57%	0.69%	0.19%	
0.22%	-0.66%	-0.52%	-2.04%	1.00%	0.24%	
1.98%	0.15%	-1.13%	-1.71%	-0.62%	-0.53%	
-0.78%	-1.23%	1.21%	0.38%	-0.25%	-0.43%	
0.24%	0.38%	-0.75%	0.81%	1.74%	1.25%	
0.12%	-1.14%	0.76%	1.19%	-1.77%	0.90%	
6.41%	0.24%	-1.42%	0.34%	-0.75%	-0.61%	
-0.96%	1.77%	8.52%	-11.17%	1.38%	1.42%	
0.74%	-0.01%	-0.05%	-6.97%	0.56%	-0.66%	
1.52%	-0.51%	-0.56%	2.53%	0.06%	-2.45%	
1.59%	0.41%	-0.41%	-2.64%	0.00%	-1.26%	
1.50%	-0.19%	0.36%	-7.82%	-1.54%	-3.05%	
-0.88%	0.22%	2.70%	2.11%	0.69%	0.60%	
0.28%	-0.88%	-0.22%	-5.29%	-4.34%	-0.18%	
-0.32%	-0.41%	0.93%	3.18%	-0.06%	-1.04%	
-0.13%	-0.34%	0.04%	0.87%	-2.86%	-0.27%	
-0.41%	1.57%	0.61%	-1.76%	0.87%	0.35%	
-0.67%	-0.09%	0.55%	1.70%	-0.40%	-0.60%	
-0.09%	0.94%	-1.55%	-0.09%	0.66%	1.55%	
0.52%	1.04%	1.52%	2.54%	-1.59%	0.23%	
-2.13%	-1.58%	0.76%	0.47%	1.48%	-0.82%	
0.31%	1.39%	2.06%	0.44%	0.13%	-1.05%	
0.38%	-0.07%	0.91%	-1.76%	1.72%	1.15%	
-0.29%	-1.18%	3.11%	-1.55%	0.32%	-0.14%	
0.27%	1.60%	-0.30%	1.36%	0.84%	-0.88%	
-0.42%	-1.34%	-0.26%	-1.56%	-0.71%	-1.45%	
-0.20%	-0.52%	0.71%	4.21%	0.97%	-0.82%	
0.58%	0.72%	1.77%	3.62%	0.64%	-0.42%	
0.38%	-1.51%	-1.32%	-4.89%	1.08%	0.29%	
-2.35%	0.45%	-0.91%	-15.88%	-1.83%	-1.30%	
-0.47%	-0.53%	-0.22%	1.53%	-2.63%	-1.43%	
-2.22%	0.33%	-0.39%	1.07%	0.20%	-2.43%	
1.37%	0.53%	-0.23%	-3.56%	0.66%	4.60%	
0.55%	-0.62%	0.18%	-2.10%	-2.09%	-1.25%	
-0.82%	-2.48%	-0.16%	2.21%	-0.07%	1.72%	
-0.41%	0.63%	0.02%	2.98%	-5.94%	-1.22%	
0.78%	1.72%	0.32%	-1.51%	3.40%	1.63%	
0.71%	-0.63%	1.93%	1.14%	0.69%	-0.64%	
0.57%	1.47%	-0.59%	2.20%	0.14%	0.91%	
2.48%	0.72%	-0.16%	3.20%	5.44%	0.04%	
0.70%	-1.25%	1.06%	-0.59%	0.39%	-0.16%	
0.48%	0.06%	0.29%	0.58%	1.29%	0.57%	
-0.30%	-1.08%	0.45%	-0.59%	-3.05%	0.15%	
0.22%	1.52%	0.43%	0.18%	0.26%	0.19%	
1.26%	-1.36%	-0.15%	-0.06%	-1.57%	0.61%	
-1.25%	1.84%	-0.12%	-1.28%	2.12%	0.71%	
2.17%	-0.54%	1.03%	2.68%	-0.21%	2.97%	
-1.06%	-0.82%	0.41%	-0.97%	-0.64%	-0.83%	
0.65%	-0.20%	-0.31%	-1.68%	0.51%	-0.22%	
-0.64%	0.84%	0.41%	2.98%	0.38%	-1.25%	
-0.22%	-0.06%	-0.02%	1.57%	0.89%	-0.54%	
1.19%	0.61%	-1.19%	-2.11%	0.69%	1.29%	
0.55%	0.64%	1.38%	0.00%	-25.76%	0.26%	
-0.44%	1.31%	0.87%	1.28%	-1.68%	-0.66%	
0.55%	-0.72%	1.57%	2.35%	3.50%	1.44%	
-0.02%	0.11%	-1.36%	-3.04%	2.56%	-0.10%	
-0.17%	0.13%	0.19%	2.89%	-2.01%	1.55%	
0.49%	0.48%	-0.86%	0.79%	-0.66%	-0.92%	
1.54%	-0.02%	-2.07%	-1.57%	0.29%	-0.38%	
-0.27%	-0.62%	-0.26%	-3.10%	-0.91%	-0.80%	
0.00%	1.14%	0.03%	0.21%	-1.25%	-0.23%	
-0.42%	-2.21%	0.32%	4.04%	-1.43%	-0.07%	
-1.57%	1.26%	-0.69%	-0.18%	0.51%	-1.67%	
-1.13%	1.01%	2.11%	-2.03%	-0.26%	1.49%	
1.03%	1.43%	-0.38%	-0.87%	-0.43%	0.77%	
-1.70%	-0.24%	-1.74%	-0.86%	-1.54%	0.36%	
1.28%	4.00%	1.33%	2.59%	-0.70%	0.58%	
0.88%	0.79%	-0.83%	-3.55%	-0.70%	-2.31%	
0.25%	-1.16%	0.92%	3.73%	-1.15%	0.51%	
-0.40%	0.05%	0.25%	-2.84%	0.09%	-2.29%	
-1.44%	-0.67%	-0.13%	-2.78%	-1.25%	-0.59%	
-0.88%	-2.45%	-0.39%	-5.58%	-2.44%	0.25%	
-0.09%	0.22%	-0.16%	9.18%	-2.22%	0.64%	
-0.35%	1.58%	1.78%	5.45%	-0.09%	-0.73%	
-3.36%	0.77%	-1.21%	-2.54%	-0.47%	-1.86%	
-1.87%	-3.75%	-1.94%	-0.92%	2.67%	0.79%	
-0.48%	-1.15%	0.48%	1.18%	-0.93%	-1.94%	
1.50%	-1.38%	0.09%	-4.86%	-2.06%	-0.33%	
-1.96%	-2.59%	-2.13%	0.41%	-2.49%	-0.87%	
-0.72%	0.98%	-2.71%	-2.36%	-0.88%	-1.49%	
-4.66%	-2.19%	1.44%	5.29%	-1.83%	-0.01%	
0.07%	-1.72%	-3.08%	2.08%	-0.30%	0.81%	
1.01%	5.47%	1.52%	-1.95%	-1.62%	-2.64%	
3.16%	-1.45%	1.54%	-2.94%	-0.05%	1.74%	
-0.26%	2.54%	0.75%	-0.66%	4.73%	5.72%	
-2.05%	-1.27%	4.15%	-2.68%	-2.80%	-0.61%	
0.07%	0.55%	-0.67%	-1.78%	6.51%	1.72%	
0.82%	0.84%	0.96%	2.38%	0.76%	1.17%	
0.45%	-0.45%	0.48%	-0.78%	1.22%	0.81%	
-1.05%	2.55%	0.61%	-0.69%	-1.95%	-0.65%	
-0.02%	2.39%	1.13%	5.86%	-1.33%	-0.61%	
0.89%	6.18%	2.05%	-0.10%	1.34%	0.74%	
2.31%	2.83%	0.72%	1.34%	-3.70%	1.36%	
-0.23%	-1.03%	0.85%	-12.71%	3.35%	3.81%	
0.21%	-0.62%	-0.41%	-6.06%	2.86%	0.27%	
0.91%	0.75%	-0.26%	-1.05%	0.46%	-0.31%	
0.05%	-1.14%	1.23%	-0.32%	-1.84%	0.85%	
-1.48%	0.62%	2.00%	1.36%	2.54%	-0.02%	
0.75%	0.86%	-1.28%	0.15%	0.73%	-0.78%	
-0.21%	1.10%	-2.53%	0.71%	-9.09%	-1.04%	
1.14%	2.27%	-0.67%	-1.76%	-3.80%	1.15%	
0.25%	-2.10%	0.79%	0.29%	-1.66%	0.81%	
-0.11%	2.07%	0.26%	-0.41%	-3.49%	-1.07%	
-0.16%	-2.00%	-0.37%	-2.17%	0.33%	-0.54%	
0.25%	-0.25%	2.93%	-0.58%	1.86%	-0.10%	
-0.85%	1.84%	2.09%	0.46%	-1.39%	0.17%	
2.02%	-1.44%	-1.44%	-1.05%	2.55%	2.11%	
0.59%	-0.64%	-0.20%	2.79%	0.16%	0.23%	
0.90%	-0.26%	1.06%	4.64%	-0.11%	0.55%	

0,22%	0,14%	0,86%	5,12%	3,92%	0,43%
0,02%	1,76%	-1,83%	-2,73%	1,83%	0,83%
0,20%	0,99%	1,25%	-1,41%	0,10%	0,61%
-2,14%	0,81%	0,29%	-0,64%	2,00%	-1,46%
1,21%	1,91%	-1,44%	-5,25%	4,31%	1,22%
-0,56%	-3,13%	0,73%	4,05%	0,66%	0,69%
-0,93%	0,89%	2,25%	0,13%	-3,73%	0,07%
0,14%	-4,28%	-0,99%	-1,98%	-2,33%	0,22%
-0,41%	-0,57%	-3,29%	5,98%	2,88%	-0,02%
-0,89%	-1,43%	-0,04%	-2,71%	-0,58%	0,06%
-0,69%	-0,38%	-0,51%	1,94%	0,97%	0,86%
-4,65%	0,18%	-2,95%	-4,64%	0,00%	0,22%
0,00%	-2,19%	0,69%	2,67%	-2,31%	-2,03%
1,71%	0,47%	-0,89%	-0,63%	0,59%	1,91%
-1,46%	-0,37%	-1,25%	-1,56%	0,49%	1,15%
-1,12%	2,40%	-1,24%	2,18%	0,29%	-1,12%
-2,14%	2,72%	4,41%	2,36%	0,19%	-0,80%
1,08%	0,22%	2,14%	-0,41%	2,03%	1,23%
0,52%	0,39%	0,85%	-0,83%	-0,47%	-1,41%
0,62%	0,63%	0,41%	2,39%	2,39%	3,27%
1,08%	-0,21%	0,25%	-0,92%	-2,14%	-0,68%
4,31%	-1,61%	0,42%	-1,05%	-0,29%	1,45%
0,05%	0,48%	0,03%	0,92%	1,91%	0,37%
-0,79%	-1,49%	0,67%	-0,13%	0,84%	-0,46%
-0,80%	-0,18%	-0,64%	-2,44%	0,19%	-0,07%
1,04%	0,65%	-0,56%	2,51%	1,48%	-1,04%
-0,84%	1,93%	-0,11%	-0,08%	-2,93%	0,68%
1,37%	2,31%	-0,20%	1,25%	-2,17%	-0,69%
-1,14%	0,03%	-1,06%	-4,17%	1,06%	0,48%
1,27%	3,01%	3,69%	4,13%	2,10%	1,92%
1,19%	-1,56%	0,79%	-0,40%	-2,43%	-0,26%
0,74%	2,38%	-1,02%	-0,95%	6,60%	1,00%
1,46%	1,67%	-0,41%	-3,89%	2,24%	0,36%
-0,72%	-1,41%	0,52%	0,16%	1,75%	1,38%
0,70%	0,37%	-0,43%	-0,03%	-0,26%	1,33%
2,32%	4,87%	0,78%	-6,12%	-0,35%	-0,05%
3,66%	0,54%	0,57%	-6,36%	1,91%	0,87%
-3,31%	4,39%	0,33%	-4,48%	-1,11%	-0,55%
0,09%	0,63%	1,15%	1,34%	4,65%	0,60%
-1,19%	-0,05%	3,02%	2,71%	-1,64%	-0,83%
0,24%	2,33%	-0,04%	1,41%	-0,42%	3,01%
1,80%	0,86%	0,02%	2,38%	6,63%	1,40%
-1,31%	-5,13%	-1,04%	-22,46%	-1,42%	-1,16%
3,40%	2,89%	-0,71%	-0,38%	0,64%	1,06%
-2,26%	-1,37%	-0,28%	2,33%	-1,90%	-0,42%
1,99%	-0,77%	-1,24%	2,69%	2,35%	-2,49%
-0,77%	0,01%	-0,37%	6,99%	2,06%	-0,25%
3,50%	0,34%	-1,20%	2,31%	2,40%	-1,56%
-0,52%	2,79%	2,57%	3,61%	-0,91%	1,81%
2,68%	-0,09%	-0,20%	-1,57%	0,69%	0,81%
-2,45%	0,66%	1,28%	13,20%	-1,59%	-2,48%
-1,42%	-0,95%	-1,61%	-2,19%	-2,39%	-1,23%
1,15%	4,21%	1,97%	-0,37%	0,24%	0,17%
1,36%	-0,88%	-0,07%	-7,25%	-1,50%	0,41%
3,21%	0,48%	0,03%	-2,07%	2,80%	1,44%
-0,74%	0,93%	1,51%	-0,13%	-1,24%	-2,53%
0,95%	-0,08%	-1,38%	-1,71%	2,36%	-0,33%
-1,94%	-1,02%	1,24%	2,24%	0,54%	0,38%
1,29%	1,95%	-0,21%	-0,56%	0,38%	0,70%
-0,44%	-0,52%	0,78%	-1,81%	-1,37%	1,09%
-0,40%	-0,06%	-0,06%	-3,36%	1,85%	1,03%
-0,20%	0,88%	-0,44%	12,76%	3,87%	1,54%
0,20%	-0,48%	-0,78%	0,78%	2,19%	-0,51%
0,47%	0,77%	2,71%	10,69%	-1,29%	0,26%
-0,67%	6,65%	-0,87%	-13,47%	1,09%	0,82%
0,06%	-2,09%	1,16%	-0,50%	-0,86%	1,16%
-0,28%	0,95%	-0,50%	13,87%	0,58%	0,47%
-1,94%	1,31%	0,56%	-4,97%	-1,72%	-0,11%
0,54%	0,66%	1,06%	-1,89%	-1,83%	0,21%
-0,12%	1,59%	10,94%	3,70%	2,08%	0,53%
-0,15%	0,08%	1,70%	-0,89%	-1,90%	0,13%
0,27%	0,95%	0,76%	6,21%	-2,23%	-0,99%
-0,29%	-0,72%	3,22%	-4,06%	-1,37%	-0,44%
0,93%	-0,46%	-1,05%	0,12%	1,00%	1,62%
3,48%	-0,39%	1,79%	-0,61%	1,15%	0,22%
0,28%	0,30%	0,54%	1,13%	0,91%	0,16%
0,71%	-1,07%	-0,51%	-0,43%	7,78%	2,19%
-0,73%	1,67%	-3,24%	-3,01%	-2,64%	-1,34%
-1,69%	-1,73%	2,54%	4,49%	-1,14%	-1,18%
-0,24%	-0,83%	-1,45%	-0,82%	0,72%	0,18%
1,09%	-3,08%	-2,86%	-0,21%	0,79%	0,97%
-2,60%	-1,04%	0,02%	-2,16%	-0,43%	-0,80%
0,02%	-0,10%	-0,12%	-0,75%	-2,50%	0,73%
-1,27%	0,79%	1,16%	0,65%	0,88%	-1,15%
-0,33%	-0,70%	0,55%	1,76%	-0,80%	-0,77%
0,69%	0,56%	2,08%	2,28%	2,85%	0,74%
2,15%	1,24%	0,06%	-0,12%	3,70%	0,27%
-1,24%	-0,34%	-0,74%	-1,77%	0,34%	-0,70%
-0,31%	1,17%	-0,51%	-2,04%	-1,37%	1,49%
1,38%	0,38%	0,00%	0,18%	0,55%	1,04%
2,13%	1,16%	-0,79%	1,83%	0,48%	0,95%
-1,45%	-2,14%	1,11%	0,32%	-0,07%	-0,32%
0,20%	1,31%	1,36%	19,44%	0,07%	1,37%
1,57%	-3,23%	0,71%	-3,18%	2,33%	1,42%
0,34%	-3,13%	-0,11%	4,78%	1,14%	-0,02%
-0,14%	-1,39%	-2,59%	-1,83%	-2,45%	-0,27%
-0,67%	2,51%	-0,51%	3,85%	-0,20%	-0,62%
-2,41%	-0,14%	-2,20%	3,38%	-2,86%	-1,25%
-5,84%	1,77%	-0,20%	-3,29%	-1,12%	-1,37%
0,35%	-2,14%	1,04%	2,30%	-0,99%	0,86%
-1,73%	0,13%	0,42%	-2,57%	0,36%	-0,26%
1,19%	3,51%	0,72%	0,07%	-1,43%	-1,54%
-0,43%	-8,11%	-0,88%	0,29%	-2,31%	-1,11%
-0,33%	0,01%	-1,12%	-0,22%	-0,15%	-0,13%
1,73%	-2,86%	-0,72%	1,62%	4,08%	-1,12%
-1,66%	2,12%	-0,07%	0,32%	1,00%	-2,01%
0,11%	-0,21%	-2,00%	-3,02%	-5,85%	-0,84%
-0,77%	6,28%	-2,37%	-5,12%	-2,47%	1,35%
0,97%	-2,63%	0,16%	-1,16%	0,23%	1,61%
-0,65%	-0,74%	1,11%	3,03%	-1,15%	-2,44%
-0,46%	0,46%	-1,27%	-0,02%	-2,48%	-0,33%
1,10%	0,47%	-1,26%	-4,54%	4,29%	0,81%
-0,09%	1,74%	0,55%	0,07%	1,98%	2,51%
-0,74%	-1,02%	2,48%	1,60%	0,15%	-0,53%
-0,48%	0,21%	-0,41%	-0,37%	-1,87%	-0,26%
0,44%	-1,52%	-0,97%	1,54%	-0,84%	-0,89%
1,54%	0,22%	-1,33%	1,65%	2,38%	1,37%
-0,22%	-0,73%	0,87%	3,80%	-0,15%	0,29%
-0,26%	-1,39%	-0,27%	0,36%	-0,90%	0,60%
1,94%	-0,61%	1,97%	0,79%	2,88%	1,18%
-0,17%	-2,22%	1,90%	-1,27%	-0,66%	-0,19%
-0,58%	2,08%	0,35%	-0,80%	0,22%	-0,14%
0,73%	-0,68%	-1,82%	-0,84%	-1,11%	1,06%
-5,90%	-0,43%	1,41%	0,21%	-1,27%	-0,69%
-1,16%	0,71%	0,42%	2,77%	-1,21%	0,68%

2.37%	1.80%	-0.27%	2.67%	1.15%	-0.49%
-0.25%	-2.86%	0.50%	-2.72%	-1.14%	-1.42%
0.61%	-1.38%	0.17%	1.14%	0.84%	0.66%
-0.16%	0.84%	1.23%	0.46%	0.30%	-1.13%
0.69%	1.66%	-2.40%	-4.14%	0.00%	0.26%
-0.27%	1.44%	0.31%	3.36%	-0.91%	-0.88%
-0.54%	-0.36%	-2.22%	0.22%	-0.61%	-0.99%
-0.02%	-0.67%	-1.54%	1.88%	-2.00%	-1.59%
1.08%	-0.39%	-2.68%	2.92%	-0.78%	-0.58%
0.60%	-1.15%	-1.08%	-1.62%	-1.27%	0.92%
-0.46%	1.86%	0.69%	6.91%	1.36%	1.39%
-1.22%	1.74%	2.66%	0.41%	-0.40%	-1.44%
-1.21%	2.79%	0.29%	0.47%	-0.79%	-0.86%
-0.02%	-0.02%	-0.80%	-1.73%	-3.04%	0.68%
-0.52%	-0.97%	0.39%	-0.15%	1.40%	-1.01%
0.09%	0.77%	0.00%	-2.22%	1.38%	1.22%
0.00%	-1.62%	-0.17%	0.19%	0.80%	-0.60%
0.43%	1.59%	1.27%	0.93%	2.79%	2.65%
1.84%	-0.28%	-1.37%	2.03%	3.41%	1.90%
-1.25%	0.19%	1.46%	-0.29%	0.60%	-0.02%
0.09%	1.48%	-1.88%	-1.57%	-1.94%	-0.30%
1.40%	-0.39%	0.73%	0.01%	3.11%	0.50%
-0.47%	0.58%	2.17%	1.04%	-0.07%	-2.10%
2.35%	-1.82%	-1.82%	-6.21%	-4.57%	-0.99%
5.31%	-0.04%	1.59%	-0.14%	-0.23%	1.38%
-0.10%	-2.43%	-0.27%	-1.65%	1.08%	-0.36%
0.58%	3.19%	-0.04%	-1.02%	-1.99%	-0.68%
-0.52%	-1.07%	0.19%	-1.57%	-0.23%	0.95%
-0.96%	3.35%	1.01%	-0.47%	-2.11%	-0.74%
-2.37%	1.79%	-2.62%	1.59%	-3.84%	-1.99%
1.68%	0.01%	0.80%	-0.62%	-1.50%	1.61%
1.84%	-1.52%	-0.31%	-3.38%	3.55%	-0.20%
0.73%	-0.25%	2.65%	2.24%	2.12%	-1.13%
1.17%	-0.86%	0.77%	5.44%	1.20%	0.98%
0.83%	-1.20%	-1.89%	-0.80%	-0.39%	-0.16%
1.55%	-1.53%	1.46%	0.78%	2.06%	0.99%
0.24%	-0.19%	-1.05%	2.02%	-0.62%	-0.31%
1.09%	4.89%	1.38%	-3.41%	-0.70%	0.61%
-1.16%	1.41%	-2.58%	-0.80%	-1.81%	-0.89%
-1.05%	1.94%	-0.64%	0.13%	-3.21%	-1.00%
-0.36%	0.58%	0.26%	-1.29%	0.25%	-0.66%
2.46%	0.60%	-0.19%	-3.91%	-0.08%	-0.50%
-3.60%	-0.75%	-1.86%	-3.55%	-3.97%	-1.61%
1.63%	0.50%	2.25%	3.90%	-2.58%	0.95%
0.38%	0.47%	1.38%	0.00%	0.80%	0.20%
0.36%	-0.33%	0.53%	2.41%	0.09%	0.45%
2.01%	-0.74%	-0.23%	-3.69%	0.88%	0.96%
2.26%	-2.99%	0.43%	-6.29%	0.26%	0.98%
-1.16%	-0.77%	-0.04%	-0.59%	0.43%	0.87%
0.02%	0.58%	1.23%	-0.59%	-0.86%	0.39%
-0.66%	1.16%	-2.09%	0.57%	-2.87%	-0.70%
-2.86%	-1.16%	-1.08%	-4.55%	0.00%	-1.01%
0.54%	-2.31%	0.52%	4.78%	-1.52%	0.59%
-1.25%	-1.49%	-1.47%	-4.36%	1.91%	-1.72%
-1.09%	-3.47%	-0.82%	-0.79%	-1.34%	-0.94%
0.90%	-5.22%	0.12%	-3.62%	-3.25%	0.79%
0.30%	-3.46%	0.04%	2.63%	0.93%	-0.02%
0.62%	4.18%	0.65%	-1.19%	-0.93%	-0.54%
-0.46%	4.10%	1.15%	-1.81%	0.00%	0.08%
-0.98%	0.57%	-3.22%	-4.35%	0.47%	-1.40%
-1.97%	0.71%	-3.67%	-4.81%	-2.05%	-3.41%
-3.02%	-6.08%	-3.68%	3.13%	-1.33%	1.11%
-2.97%	-1.47%	-4.96%	-1.72%	-0.48%	-2.59%
2.35%	1.23%	0.57%	1.04%	-2.32%	2.69%
-2.00%	-1.50%	4.54%	8.90%	5.84%	0.40%
4.80%	-0.49%	2.47%	4.26%	-2.15%	1.03%
-2.28%	-3.86%	0.90%	0.95%	1.15%	1.03%
1.61%	3.25%	-1.69%	-1.52%	-0.85%	0.20%
-0.72%	-2.98%	-2.77%	-7.63%	-0.86%	-1.36%
1.95%	-0.43%	2.70%	2.84%	-0.58%	0.26%
0.35%	-0.51%	0.27%	-1.05%	-0.19%	2.05%
-1.06%	0.83%	-6.68%	3.12%	2.13%	-1.52%
-2.79%	0.25%	-1.76%	2.88%	-3.89%	0.17%
1.27%	-2.37%	-0.13%	-0.30%	1.68%	0.19%
0.43%	-1.08%	-0.79%	0.36%	1.17%	0.65%
0.76%	-2.14%	0.17%	1.06%	1.73%	-0.46%
0.95%	2.26%	-1.06%	-2.40%	3.77%	-0.77%
4.17%	-0.72%	1.00%	0.59%	-0.55%	-0.63%
0.78%	-4.47%	0.70%	2.31%	-0.46%	-0.26%
-0.12%	2.64%	-0.88%	0.06%	0.18%	1.19%
0.66%	6.52%	-2.79%	-0.69%	0.18%	-0.41%
0.20%	0.56%	2.31%	-1.68%	0.82%	0.10%
0.10%	2.96%	0.34%	-1.56%	-1.63%	1.42%
-1.73%	3.42%	-0.23%	-4.59%	-0.55%	-0.83%
-1.42%	0.40%	-1.11%	-1.06%	-1.58%	1.30%
1.81%	-2.99%	-2.32%	-2.69%	0.00%	-1.72%
-1.74%	0.23%	-3.82%	-0.44%	-2.17%	3.80%
-0.20%	-2.61%	0.35%	0.40%	4.14%	-1.47%
1.71%	-0.64%	3.09%	8.90%	-4.16%	-0.92%
0.10%	3.16%	-1.62%	-4.66%	-2.70%	3.43%
-2.02%	1.54%	1.36%	5.80%	3.67%	-0.93%
5.25%	-0.49%	-0.25%	6.21%	1.82%	0.20%
4.02%	-0.10%	-3.06%	-3.12%	1.22%	1.43%
-0.78%	2.14%	-1.11%	3.75%	3.53%	0.16%
-0.34%	-0.02%	-0.86%	2.35%	2.15%	-0.29%
0.30%	2.84%	-3.73%	-1.93%	0.09%	1.33%
-0.15%	0.41%	1.13%	1.16%	2.54%	-0.64%
0.24%	-1.09%	-0.01%	-0.53%	-0.34%	0.42%
-0.15%	0.77%	-0.31%	-3.62%	1.03%	-0.66%
-1.49%	6.29%	4.42%	7.92%	-0.08%	-1.26%
0.00%	3.73%	-0.30%	-2.82%	-1.70%	0.08%
0.95%	-1.36%	-0.24%	-0.85%	1.30%	0.02%
0.79%	2.26%	0.69%	-4.25%	-4.95%	0.85%
-0.69%	-1.08%	0.87%	-2.61%	1.89%	-0.23%
0.55%	0.05%	0.22%	1.43%	-2.56%	0.33%
0.00%	0.60%	2.83%	0.84%	-0.18%	0.88%
-1.50%	0.60%	-0.22%	-6.52%	2.45%	1.75%
1.53%	-0.06%	0.04%	0.34%	0.44%	0.66%
-0.34%	-1.50%	2.90%	11.86%	-0.70%	-0.72%
-0.32%	0.41%	0.41%	1.66%	-1.86%	0.38%
0.74%	0.56%	1.05%	-3.80%	-1.45%	0.31%
0.11%	1.52%	1.51%	4.10%	1.47%	0.08%
-0.53%	-1.64%	-1.28%	0.78%	2.26%	-0.06%
-2.49%	1.54%	1.85%	0.60%	-0.44%	0.00%
-0.85%	0.11%	-0.16%	-0.06%	0.09%	-0.44%
1.07%	1.43%	1.20%	1.57%	-1.51%	1.45%
1.12%	-1.73%	-0.94%	2.24%	0.45%	-0.45%
-0.13%	1.16%	0.20%	-1.02%	2.33%	-1.14%
-1.28%	-0.99%	-2.32%	-2.27%	-2.72%	0.47%
2.23%	-0.46%	-1.94%	-5.04%	2.07%	0.36%
-3.73%	0.25%	0.81%	0.37%	2.21%	-0.52%
1.08%	-0.71%	2.69%	3.00%	-5.18%	-0.87%
0.28%	-2.81%	-3.34%	0.65%	-0.46%	0.37%
2.37%	-2.00%	0.66%	-0.40%	-2.01%	1.65%
0.47%	1.72%	-1.55%	1.36%	3.55%	-0.22%

0.08%	-0.49%	0.72%	5.52%	0.99%	0.80%
0.87%	0.09%	-0.68%	-1.17%	-0.45%	0.25%
0.56%	-1.09%	0.77%	-1.78%	0.72%	-0.56%
-3.38%	1.07%	0.80%	-0.22%	0.53%	-1.83%
0.25%	-1.04%	1.48%	0.10%	-3.10%	1.64%
2.80%	-0.71%	-0.23%	-0.81%	1.01%	0.19%
-0.28%	2.06%	0.54%	-2.65%	0.72%	0.48%
0.80%	1.59%	1.13%	-1.40%	-2.25%	0.02%
2.51%	-0.75%	-7.75%	-5.15%	1.10%	-0.02%
0.42%	-0.76%	-7.79%	4.05%	-1.82%	0.71%
-2.49%	0.27%	1.99%	0.21%	-1.57%	-1.55%
-3.15%	-0.33%	1.38%	-1.14%	0.00%	1.84%
1.81%	-0.20%	-3.60%	-1.68%	-0.19%	2.97%
-2.25%	0.79%	3.33%	0.40%	0.00%	-0.59%
-0.42%	1.60%	-0.24%	-6.24%	-1.41%	0.25%
-1.70%	0.15%	-0.31%	-0.16%	-1.63%	-0.64%
-1.00%	0.40%	1.84%	0.44%	-0.10%	-0.86%
-2.08%	0.88%	1.43%	2.93%	-0.10%	-1.01%
3.24%	0.42%	-0.53%	-1.28%	-3.02%	1.68%
6.98%	-6.07%	-0.92%	-2.99%	2.21%	0.08%
0.26%	-0.13%	-1.89%	-0.43%	1.96%	1.16%
7.03%	-2.24%	0.10%	0.29%	1.16%	-0.39%
-1.40%	2.78%	1.83%	-1.22%	-2.38%	-0.49%
0.14%	-2.09%	-0.48%	-2.27%	0.49%	-0.21%
-0.40%	0.52%	-0.16%	-3.21%	-0.10%	0.87%
-2.64%	-0.26%	0.65%	2.13%	3.30%	0.46%
1.25%	0.39%	-0.75%	-1.62%	1.13%	1.05%
0.51%	-0.10%	-0.32%	0.35%	1.40%	0.04%
-2.07%	-2.82%	-1.46%	0.01%	-1.74%	-1.35%
0.88%	2.68%	0.56%	0.63%	-1.87%	0.12%
-0.21%	1.41%	-0.29%	-1.14%	-0.95%	-0.74%
-4.16%	-1.90%	-4.15%	-4.78%	-2.79%	-1.82%
-1.33%	1.84%	0.63%	0.63%	-0.10%	-0.85%
-2.12%	-4.56%	-0.18%	0.79%	-3.17%	-1.32%
3.40%	1.87%	0.00%	0.63%	-2.09%	2.30%
3.71%	-2.53%	-1.86%	-1.77%	2.87%	-0.59%
-3.08%	3.20%	-1.04%	0.67%	-1.01%	-1.33%
-1.00%	-5.57%	-2.21%	-1.04%	-1.74%	-0.40%
-0.91%	-1.95%	-0.62%	-0.06%	-0.68%	-0.79%
1.54%	-0.57%	2.74%	4.43%	-2.05%	1.46%
-1.35%	-0.06%	-0.08%	-2.68%	0.64%	-1.05%
-0.19%	-9.17%	3.98%	0.87%	-0.11%	0.74%
1.56%	2.84%	-2.31%	-2.37%	2.88%	4.60%
1.22%	-4.15%	2.50%	-0.94%	2.75%	-0.31%
0.26%	7.79%	-0.44%	-2.59%	-0.96%	1.10%
0.11%	3.47%	-1.79%	-1.49%	0.51%	1.47%
-3.34%	-0.89%	4.39%	1.89%	0.35%	-0.74%
2.79%	3.52%	0.21%	-1.09%	-3.33%	1.42%
2.85%	-0.37%	-0.32%	-2.27%	3.66%	0.82%
-1.09%	0.61%	-0.58%	0.33%	-12.14%	-0.03%
4.10%	-1.38%	-2.11%	-0.77%	-7.28%	-1.66%
-2.38%	0.21%	-3.18%	-4.65%	0.06%	-1.66%
-1.99%	-0.29%	-1.67%	0.14%	1.98%	0.06%
-5.33%	-0.56%	1.19%	-1.01%	-4.06%	-2.53%
1.86%	1.99%	3.37%	1.15%	-7.14%	0.12%
-0.90%	-0.76%	1.21%	-0.60%	6.12%	1.79%
-3.00%	5.21%	0.04%	1.21%	-0.83%	-0.19%
2.52%	-1.19%	4.31%	1.37%	-2.97%	-1.70%
5.45%	1.05%	1.17%	3.46%	2.40%	0.44%
0.49%	-2.15%	0.38%	-3.79%	5.07%	0.44%
5.11%	0.99%	0.65%	0.06%	-0.25%	0.47%
0.51%	-2.17%	2.16%	1.44%	5.28%	-0.07%
-1.62%	0.42%	-0.94%	-0.71%	0.18%	-0.01%
0.45%	-0.31%	0.32%	-0.75%	-2.77%	0.54%
-1.47%	1.28%	2.40%	-0.09%	2.12%	0.13%
2.19%	-0.43%	0.72%	1.96%	-1.66%	-1.29%
-0.31%	-1.35%	-0.73%	-0.09%	-3.68%	-2.77%
-0.88%	1.20%	1.81%	-0.42%	0.08%	0.25%
0.33%	-1.62%	-1.43%	2.08%	0.98%	-1.59%
2.07%	5.66%	0.29%	13.76%	4.86%	1.43%
-0.46%	0.06%	4.82%	0.95%	3.53%	-0.33%
-1.73%	-1.36%	-0.42%	3.16%	-0.78%	0.61%
-1.30%	1.65%	-2.10%	-5.63%	-3.21%	-0.06%
-0.09%	0.59%	-0.56%	2.20%	1.40%	0.26%
-1.70%	-1.23%	-0.88%	-5.23%	0.69%	-0.45%
0.43%	-1.71%	1.21%	2.08%	-1.60%	1.26%
-2.27%	-3.01%	-0.65%	-1.96%	-0.23%	-1.29%
-0.36%	-2.34%	-1.99%	2.24%	-1.69%	1.55%
0.16%	1.77%	-1.06%	-2.12%	2.07%	1.13%
-1.02%	0.59%	-1.78%	-0.14%	0.58%	0.15%
0.18%	-1.25%	4.26%	5.79%	-5.30%	-0.26%
-0.40%	1.73%	0.62%	-3.88%	-2.49%	-0.27%
0.63%	2.80%	-0.24%	2.86%	1.18%	-0.79%
-0.09%	-3.50%	-0.56%	-3.52%	2.83%	0.86%
0.00%	-0.63%	0.22%	-0.47%	-0.54%	-0.02%
0.37%	3.54%	0.25%	-0.32%	0.48%	0.73%
-1.32%	3.95%	2.61%	4.06%	-2.28%	-1.16%
-0.43%	-1.05%	0.49%	-2.29%	-2.94%	0.18%
1.12%	-2.98%	-1.70%	1.14%	-1.14%	1.06%
-0.13%	3.18%	2.29%	-0.34%	2.24%	0.21%
-0.88%	-1.69%	-0.63%	-0.17%	-2.00%	1.30%
0.82%	2.83%	-0.73%	0.61%	-0.45%	0.52%
5.60%	-1.81%	2.50%	0.95%	-1.67%	-0.62%
0.82%	1.94%	-1.85%	1.00%	1.43%	0.36%
0.55%	-1.83%	-0.88%	1.91%	2.63%	-0.55%
0.84%	-1.63%	-0.23%	2.53%	-3.69%	-0.77%
-0.96%	0.63%	0.52%	-0.57%	-0.78%	0.27%
0.21%	-3.51%	0.57%	-0.04%	3.54%	-0.07%
-1.02%	0.45%	-0.61%	-0.98%	-3.35%	0.60%
1.22%	-5.37%	1.47%	1.18%	3.27%	0.24%
-0.81%	2.13%	0.33%	2.15%	-1.40%	-0.33%
1.09%	-0.20%	-0.22%	-2.64%	-1.74%	0.27%
-0.67%	-1.13%	1.36%	-0.10%	1.96%	0.52%
-0.03%	-0.35%	0.01%	-1.73%	2.05%	-4.83%
-0.24%	-1.49%	0.01%	2.88%	0.63%	-0.12%
-0.97%	-0.80%	-0.61%	0.86%	2.00%	-0.53%
0.10%	0.09%	0.78%	-0.56%	-0.74%	0.00%
0.00%	-0.01%	-0.84%	-0.57%	-1.23%	-0.09%
-0.10%	-0.43%	-1.70%	-2.07%	0.87%	1.09%
0.47%	0.45%	-2.63%	-0.51%	-0.06%	-0.02%
-1.01%	-1.08%	0.34%	-1.68%	-3.35%	-0.60%
1.18%	-0.11%	0.10%	0.43%	-1.22%	0.96%
1.82%	-0.01%	-0.59%	-0.04%	0.84%	-0.75%
1.65%	0.11%	0.99%	-0.35%	-1.48%	0.02%
-0.57%	0.26%	-0.23%	-0.09%	-2.61%	0.36%
-0.10%	2.20%	1.37%	-0.09%	1.07%	-0.91%
3.34%	-2.41%	0.74%	-0.16%	0.13%	0.59%
0.00%	-0.55%	-1.16%	1.69%	-0.46%	1.10%
2.99%	-0.18%	0.69%	-23.73%	-1.87%	-1.33%
1.92%	-0.76%	0.98%	-3.48%	-9.10%	0.11%
0.87%	1.59%	2.70%	-5.63%	-4.33%	0.25%
1.99%	0.88%	-1.28%	2.39%	1.95%	0.63%
-1.24%	-1.19%	0.91%	5.86%	-0.23%	0.78%
2.59%	2.36%	0.76%	-2.98%	1.53%	-1.82%
2.37%	-4.75%	0.49%	0.01%	0.98%	0.03%

-1.44%	1.04%	0.52%	-1.63%	-3.29%	-0.23%
-0.62%	0.19%	1.88%	-1.81%	0.70%	1.14%
0.03%	-2.05%	0.87%	9.64%	0.31%	0.22%
2.13%	1.71%	-1.98%	-3.36%	1.07%	1.06%
0.55%	2.02%	1.06%	0.33%	1.44%	0.87%
0.72%	1.55%	0.05%	-0.14%	-0.15%	-1.24%
-0.01%	-1.73%	1.22%	-0.13%	0.60%	-0.06%
0.95%	-0.08%	1.41%	3.45%	0.22%	-0.76%
-2.55%	0.41%	-3.08%	-0.50%	3.19%	0.58%
-1.23%	2.36%	-1.29%	3.81%	-1.22%	0.26%
1.67%	0.02%	1.15%	-0.04%	1.09%	-0.17%
-0.16%	1.81%	-0.38%	-1.50%	2.45%	0.21%
0.07%	-1.77%	0.86%	-5.35%	-1.48%	-0.09%
-0.25%	1.33%	-0.62%	-1.80%	-0.50%	-1.11%
-0.99%	-1.05%	-0.92%	9.67%	1.00%	-1.00%
-1.93%	0.69%	1.17%	-4.54%	-2.70%	-2.92%
-0.08%	-2.22%	-0.73%	0.08%	-2.55%	-0.63%
1.57%	0.43%	0.54%	-0.59%	-0.52%	3.07%
0.10%	1.03%	-1.09%	-2.42%	-0.60%	-1.07%
-1.72%	0.79%	1.15%	2.24%	-0.98%	-1.54%
2.43%	-0.07%	1.41%	-2.79%	-1.91%	3.35%
0.00%	2.05%	-1.09%	-3.25%	4.52%	0.55%
-1.74%	-0.28%	0.44%	6.00%	3.28%	0.56%
0.94%	0.70%	2.56%	0.97%	-0.14%	-0.74%
1.47%	-0.44%	-1.46%	-4.98%	1.09%	-2.00%
-3.33%	-2.42%	2.98%	0.37%	0.86%	-1.01%
1.97%	0.06%	0.28%	0.24%	-5.46%	0.54%
2.31%	-0.90%	1.19%	4.14%	-5.86%	3.64%
5.65%	1.85%	3.07%	4.97%	2.55%	0.77%
0.45%	0.16%	0.59%	-2.75%	5.52%	2.19%
-1.26%	-0.72%	-0.08%	0.50%	0.44%	-0.25%
-0.54%	-1.77%	0.83%	2.32%	-0.66%	-1.36%
0.51%	2.66%	1.93%	4.06%	-0.22%	-0.47%
-0.01%	8.35%	0.11%	5.30%	-2.22%	0.58%
0.82%	-2.42%	-1.96%	-1.12%	-1.51%	0.56%
1.26%	0.96%	-0.12%	-0.60%	0.54%	1.23%
-0.43%	3.00%	-0.20%	1.17%	0.84%	0.21%
1.69%	0.80%	0.46%	4.43%	-0.53%	4.45%
-4.22%	-1.37%	-0.80%	-0.33%	0.53%	-2.56%
-3.26%	-0.34%	0.21%	-0.77%	-2.05%	-2.61%
2.18%	-0.10%	0.72%	1.47%	0.77%	0.91%
-6.60%	-0.99%	-1.15%	-1.31%	2.92%	-0.47%
2.04%	-1.19%	1.12%	1.08%	0.00%	0.09%
-3.15%	-1.34%	-1.02%	-1.38%	0.75%	-0.79%
1.78%	0.06%	1.80%	2.21%	-0.52%	1.31%
-1.40%	-1.49%	-0.50%	0.28%	-1.41%	0.89%
1.65%	2.39%	0.71%	1.79%	1.96%	-0.21%
0.18%	0.41%	-0.02%	0.31%	0.96%	0.78%
-0.30%	-0.19%	0.18%	1.27%	5.06%	0.51%
0.45%	1.31%	-0.94%	-1.31%	0.70%	0.42%
0.24%	-0.04%	0.33%	-2.82%	-1.04%	0.29%
0.49%	-0.29%	0.43%	24.50%	-0.42%	-1.17%
-0.98%	1.71%	1.00%	3.31%	0.70%	0.06%
0.05%	-0.35%	-0.91%	-1.58%	-3.28%	0.53%
0.90%	-0.86%	0.23%	-0.72%	1.08%	0.99%
-0.94%	2.02%	-1.02%	-0.15%	15.51%	-0.37%
2.70%	-3.93%	0.92%	-0.61%	1.24%	0.85%
-1.86%	-0.25%	-0.99%	7.41%	-0.06%	-0.10%
1.41%	2.03%	0.42%	2.58%	-0.92%	1.19%
-1.97%	1.01%	-1.18%	-0.06%	-2.65%	0.34%
1.23%	0.57%	-0.92%	-0.63%	1.46%	0.25%
-0.41%	-0.04%	0.28%	-2.21%	1.19%	-0.52%
-0.86%	-1.36%	1.61%	1.02%	-1.36%	-0.48%
-0.06%	0.81%	0.27%	1.41%	0.56%	0.85%
0.18%	-0.58%	0.98%	-2.40%	1.62%	1.32%
-1.38%	-0.98%	-0.04%	-1.86%	-1.10%	-0.71%
0.02%	2.84%	-0.81%	1.32%	5.33%	-0.07%
-0.27%	0.69%	0.81%	0.75%	4.82%	0.25%
0.43%	3.77%	1.50%	-0.28%	-1.91%	-0.15%
0.17%	-1.82%	0.33%	1.22%	-0.51%	-3.00%
-0.17%	-0.33%	-0.38%	-1.92%	1.15%	2.99%
-1.05%	0.93%	-0.65%	-1.15%	-1.93%	-1.68%
-1.02%	-1.83%	0.68%	3.27%	-0.35%	-0.07%
0.35%	0.49%	0.39%	-1.65%	-0.93%	0.50%
0.82%	-1.71%	0.27%	3.18%	-1.12%	0.95%
0.80%	2.61%	-1.15%	-1.93%	0.89%	0.34%
0.11%	-0.03%	-0.77%	-3.08%	0.47%	0.32%
0.23%	-0.59%	1.01%	4.45%	-0.18%	-0.10%
-1.78%	-0.43%	-0.37%	-5.26%	0.23%	-0.92%
-0.27%	1.20%	-0.43%	0.41%	-1.05%	-0.68%
0.43%	0.57%	2.43%	2.15%	-2.07%	-0.33%
-0.40%	-2.27%	0.05%	6.15%	-1.03%	-0.24%
3.06%	-1.34%	-0.20%	3.36%	-1.40%	0.36%
0.92%	0.95%	-0.91%	-1.79%	1.11%	0.51%
-0.10%	1.77%	-0.42%	-0.40%	6.25%	1.02%
0.96%	0.40%	-1.10%	0.44%	-2.02%	0.80%
0.00%	0.04%	-2.04%	-0.97%	1.59%	0.88%
0.41%	0.38%	-1.81%	-3.45%	-1.39%	-1.10%
0.64%	0.53%	0.42%	3.00%	-0.53%	0.88%
-1.70%	-1.18%	0.32%	-0.86%	3.96%	-0.12%
-2.23%	0.11%	-1.65%	-1.35%	1.19%	-0.28%
0.08%	5.22%	1.67%	2.46%	-1.91%	0.92%
3.16%	-1.68%	-0.59%	0.15%	-2.29%	-0.16%
-0.93%	1.94%	-0.43%	-1.43%	1.76%	-0.34%
-0.12%	-0.73%	0.16%	0.76%	-1.15%	0.26%
2.16%	0.28%	1.34%	0.91%	-0.70%	1.03%
-1.80%	-1.17%	0.77%	-0.23%	0.23%	-0.94%
-0.28%	-1.63%	1.17%	9.88%	3.04%	0.19%
-0.72%	0.67%	-0.55%	-4.16%	1.59%	-0.58%
1.98%	-0.38%	0.24%	-0.60%	6.09%	0.40%
0.04%	-4.99%	-0.84%	-3.03%	0.11%	0.45%
-1.78%	5.90%	0.23%	-1.35%	-0.05%	-0.60%
0.07%	-0.68%	0.17%	2.46%	0.16%	-0.07%
1.46%	1.56%	1.49%	0.17%	-0.68%	0.63%
-1.31%	1.26%	-0.89%	0.05%	0.58%	0.40%
2.28%	0.21%	0.69%	0.40%	3.10%	0.85%
-0.86%	-0.17%	0.02%	0.42%	-0.77%	0.50%
0.31%	-1.42%	0.87%	-2.10%	0.57%	0.39%
-0.04%	0.66%	0.67%	-1.14%	1.02%	-2.09%
-0.83%	-0.02%	-3.17%	-2.92%	-1.32%	-4.80%
0.69%	-0.76%	-0.40%	0.12%	0.00%	0.48%
-2.05%	1.07%	-0.77%	-3.04%	-0.51%	-2.71%
-2.18%	-0.83%	0.42%	-2.84%	2.22%	-2.90%
-0.20%	-0.49%	-1.95%	-1.26%	-3.18%	2.44%
-0.59%	-1.26%	-0.33%	-2.74%	0.68%	-6.41%
-0.37%	0.39%	-0.20%	2.36%	0.36%	-0.38%
-0.55%	-1.15%	0.96%	6.83%	-1.70%	-1.19%
1.00%	-2.25%	3.40%	2.00%	0.21%	0.90%
-3.84%	-0.52%	1.62%	0.69%	-1.62%	-0.91%
4.70%	1.35%	0.42%	4.91%	-0.48%	-3.36%
-0.52%	1.28%	-0.64%	3.35%	-0.21%	0.58%
0.41%	0.49%	-1.31%	8.55%	1.02%	0.26%
-4.65%	-0.77%	-2.99%	-0.35%	0.69%	-1.75%
-4.57%	0.32%	1.20%	0.61%	-2.84%	1.05%
-0.29%	1.69%	0.36%	0.33%	-13.66%	0.10%

1.86%	2.93%	1.97%	1.04%	4.08%	0.08%
0.68%	1.69%	-1.00%	3.23%	-2.29%	1.03%
-0.39%	1.55%	0.36%	-1.31%	-1.73%	-0.36%
1.82%	1.07%	-1.88%	-1.37%	-2.39%	-0.30%
0.15%	-1.75%	-0.14%	3.97%	3.93%	-0.23%
-2.88%	0.18%	0.94%	-0.72%	-1.86%	-0.41%
-1.67%	0.66%	-1.66%	-2.56%	0.06%	-1.05%
2.21%	-0.41%	0.76%	0.62%	-0.76%	0.42%
0.68%	0.55%	-2.76%	1.52%	0.19%	-0.84%
-0.05%	-0.43%	-3.72%	-1.16%	-1.97%	-0.47%
0.03%	0.66%	1.55%	-2.87%	-2.07%	1.03%
1.27%	0.37%	0.27%	5.28%	-1.59%	-0.32%
-1.64%	1.30%	1.49%	-0.48%	2.08%	-1.28%
-0.69%	-1.76%	1.30%	1.04%	-0.39%	-0.38%
1.05%	0.01%	0.93%	-0.08%	1.78%	0.92%
-1.07%	0.57%	2.22%	2.81%	1.82%	1.10%
0.94%	-1.13%	1.38%	-2.02%	0.89%	1.02%
2.48%	1.59%	0.72%	2.33%	2.53%	-1.10%
2.94%	-1.53%	0.79%	-0.03%	0.12%	1.01%
-1.89%	-1.65%	1.68%	2.08%	-0.37%	-0.57%
1.47%	-1.33%	-0.82%	-0.34%	1.23%	0.95%
4.56%	-1.72%	0.35%	-0.89%	1.34%	-0.41%
0.43%	0.94%	0.35%	0.61%	-0.54%	0.93%
-0.97%	-0.91%	-0.80%	-0.81%	0.91%	0.68%
-0.24%	-1.05%	-0.99%	1.66%	-1.80%	0.39%
-0.53%	2.51%	1.16%	-2.36%	-1.95%	-0.29%
-0.22%	2.30%	1.14%	1.78%	-0.25%	-0.31%
0.52%	0.95%	-0.73%	0.02%	-0.12%	0.15%
1.21%	1.41%	-0.71%	-3.85%	-0.38%	0.29%
1.10%	0.23%	-0.54%	-1.58%	-0.88%	0.31%
-0.31%	-0.97%	1.18%	-0.35%	0.25%	1.42%
-1.02%	-0.32%	0.91%	0.61%	-0.32%	0.14%
0.17%	0.39%	-2.09%	-1.10%	0.00%	0.58%
2.29%	1.35%	1.17%	0.23%	0.19%	0.14%
-0.89%	0.12%	0.09%	-0.40%	0.63%	1.26%
-0.82%	0.29%	2.27%	-0.75%	0.88%	-0.99%
-0.37%	0.36%	-2.47%	-0.72%	0.56%	0.16%
-0.06%	3.00%	-0.48%	-4.50%	-1.05%	0.40%
-1.07%	0.85%	0.91%	1.66%	0.31%	0.39%
0.71%	-1.77%	0.74%	-4.48%	-1.43%	0.06%
1.46%	0.48%	1.29%	0.27%	-0.89%	0.09%
-1.48%	-0.61%	-0.91%	-2.31%	-0.38%	0.19%
-0.14%	1.95%	-0.54%	-0.85%	-0.90%	1.24%
0.63%	-0.78%	-1.05%	-2.11%	-0.13%	-0.03%
-0.23%	0.45%	0.00%	1.86%	1.55%	0.20%
-0.26%	0.06%	0.07%	1.93%	3.76%	-0.03%
-1.13%	0.57%	0.95%	-0.92%	-1.84%	-0.87%
-0.97%	0.47%	1.15%	2.43%	-0.50%	-0.22%
-0.32%	-0.92%	-0.90%	-2.98%	-13.91%	-0.33%
0.48%	0.46%	0.60%	1.09%	-2.19%	-0.28%
1.78%	0.84%	0.86%	3.30%	0.60%	0.31%
0.16%	1.53%	0.78%	-2.37%	0.15%	0.60%
1.18%	-0.70%	0.37%	1.79%	1.04%	1.29%
-0.41%	0.04%	-0.02%	-1.68%	-1.10%	-0.09%
-1.69%	0.25%	0.97%	0.65%	1.19%	-0.49%
4.01%	2.39%	0.28%	-3.17%	0.29%	-0.03%
0.36%	0.18%	1.23%	2.48%	0.44%	0.74%
0.08%	0.73%	0.41%	0.15%	-7.50%	0.65%
-1.29%	-0.76%	0.51%	0.90%	1.02%	-0.08%
0.70%	0.01%	0.40%	-1.33%	0.39%	1.96%
0.46%	-0.12%	-0.38%	1.85%	0.08%	0.48%
0.55%	0.70%	-1.11%	-2.69%	-1.09%	1.33%
2.22%	0.10%	3.43%	3.15%	-0.47%	1.19%
3.97%	1.12%	0.49%	0.72%	-0.16%	0.19%
-0.40%	-0.85%	-0.44%	-0.69%	1.10%	0.28%
0.91%	0.29%	0.77%	0.78%	0.47%	-0.03%
-0.04%	-0.57%	1.60%	1.18%	2.87%	-0.65%
0.81%	0.11%	-0.63%	-0.24%	-2.57%	-0.15%
-0.10%	1.20%	0.20%	-1.88%	-0.85%	0.45%
1.19%	0.09%	1.09%	3.30%	-0.94%	1.00%
0.65%	0.07%	0.57%	-0.35%	0.55%	-0.42%
0.23%	-0.84%	-4.36%	1.11%	1.33%	-0.04%
-0.14%	-0.04%	0.43%	-1.53%	-0.39%	0.23%
1.64%	-0.90%	-0.43%	-1.84%	-0.62%	0.46%
1.13%	3.03%	0.55%	-2.26%	-0.31%	0.36%
0.87%	-2.26%	-0.05%	-0.85%	0.39%	1.59%
-0.07%	-0.58%	-1.03%	-0.88%	1.41%	0.63%
0.04%	0.21%	0.22%	-0.88%	-0.54%	-0.71%
0.53%	1.42%	-0.01%	1.00%	0.08%	0.17%
0.05%	-2.19%	-0.60%	0.32%	1.78%	-0.14%
0.63%	-0.34%	-0.79%	0.21%	-0.76%	-0.14%
-0.67%	-0.24%	0.99%	0.77%	0.00%	2.38%
0.00%	-0.47%	0.55%	-2.03%	0.77%	-0.68%
-0.24%	-0.39%	-1.11%	-4.75%	-0.08%	-0.76%
0.00%	-0.14%	2.40%	3.35%	0.61%	0.15%
-0.12%	-0.47%	0.09%	-0.38%	0.61%	-0.04%
0.50%	0.62%	-0.11%	0.89%	-0.98%	0.10%
-0.29%	-1.79%	-0.61%	-0.62%	0.68%	0.31%
1.52%	0.46%	0.10%	1.00%	-3.70%	0.17%
-2.35%	1.95%	0.56%	0.94%	-0.47%	-0.92%
-4.99%	0.37%	0.26%	2.41%	-0.31%	0.35%
0.05%	-1.09%	1.12%	-0.78%	0.32%	0.04%
-0.04%	0.30%	-0.31%	-0.18%	-1.73%	0.70%
-0.23%	0.33%	0.05%	-0.04%	1.04%	-0.24%
0.94%	3.90%	-1.14%	-2.97%	2.06%	0.24%
2.03%	-2.09%	0.04%	0.19%	0.00%	-0.43%
-0.65%	0.39%	0.49%	3.68%	2.72%	0.00%
0.58%	-1.14%	-0.03%	-2.09%	1.36%	0.82%
-0.86%	0.27%	0.10%	0.44%	-2.01%	0.21%
2.96%	-1.19%	-0.75%	-2.13%	1.45%	0.37%
0.70%	0.97%	0.10%	-1.63%	0.15%	-0.37%
-0.12%	1.63%	-0.10%	1.35%	-3.00%	0.19%
0.90%	-2.31%	-0.72%	-0.86%	1.08%	0.05%
0.63%	-0.57%	0.90%	0.74%	-1.38%	1.46%
0.18%	-0.88%	1.10%	0.48%	0.47%	-0.45%
1.08%	-0.48%	-0.79%	-1.68%	0.08%	0.56%
0.00%	0.92%	-0.11%	0.80%	-2.00%	0.42%
-0.49%	0.34%	-0.64%	3.61%	-0.08%	-0.67%
1.46%	-0.60%	-0.48%	6.21%	-0.47%	-0.05%
-1.61%	0.54%	-0.03%	0.76%	-0.95%	0.30%
-1.44%	0.32%	0.27%	-2.55%	3.19%	0.96%
1.17%	-0.49%	0.33%	3.34%	-0.85%	2.33%
0.19%	1.95%	0.26%	-3.05%	0.08%	-0.09%
-0.93%	1.71%	0.46%	-1.03%	2.65%	0.45%
1.60%	0.70%	0.38%	-2.37%	0.15%	-5.56%
-1.04%	-0.11%	0.30%	-0.59%	0.15%	-3.01%
1.02%	-1.14%	1.01%	0.67%	0.61%	2.59%
-0.58%	-0.68%	1.07%	-3.02%	-0.15%	-0.28%
1.42%	-0.96%	-0.09%	-0.97%	-0.45%	1.41%
0.59%	-0.47%	0.08%	-2.03%	1.14%	-2.40%
-1.19%	-0.83%	-0.52%	-0.09%	2.47%	-0.08%
2.52%	1.94%	0.68%	2.74%	0.22%	0.00%
-0.06%	-1.23%	-0.71%	-1.49%	-1.68%	0.07%
3.99%	1.70%	-1.18%	-2.21%	-0.30%	-0.38%
-0.03%	0.77%	0.98%	3.65%	5.95%	0.34%

0.33%	1.17%	0.13%	-4.42%	-3.65%	0.08%
0.38%	-1.35%	1.93%	-0.81%	-0.36%	-0.11%
-2.46%	0.51%	0.36%	-1.63%	0.95%	-0.27%
-0.49%	0.53%	-0.04%	-0.85%	-1.23%	0.86%
-0.14%	0.43%	0.37%	0.07%	-2.42%	0.24%
-0.17%	0.52%	-0.15%	1.32%	-0.75%	-0.07%
0.14%	-0.66%	0.33%	-2.68%	0.00%	0.14%
1.42%	1.54%	-0.26%	0.03%	2.05%	-0.04%
0.56%	-2.20%	0.74%	1.91%	-0.52%	0.45%
1.16%	-0.09%	7.77%	0.46%	3.73%	0.31%
0.14%	-1.30%	1.33%	-0.28%	-1.80%	1.01%
1.08%	0.02%	0.10%	-2.87%	-0.37%	-0.96%
0.43%	-1.24%	0.79%	0.18%	0.07%	-0.75%
1.02%	-1.64%	-0.17%	0.94%	-1.10%	1.62%
0.66%	0.85%	-1.61%	-0.37%	-1.19%	-1.44%
0.91%	1.53%	-0.36%	4.87%	-0.75%	-1.45%
0.42%	0.35%	1.62%	0.40%	3.03%	-0.33%
-1.63%	0.04%	-0.81%	-0.55%	0.74%	0.17%
1.65%	-0.12%	1.02%	2.25%	-1.39%	-0.27%
-2.38%	0.88%	-0.85%	-1.51%	-2.00%	-2.05%
0.02%	0.29%	1.77%	2.53%	0.83%	0.77%
0.02%	-0.48%	0.41%	0.13%	-3.15%	0.39%
-1.42%	-0.17%	0.15%	0.22%	4.18%	-0.99%
2.09%	-0.45%	0.64%	9.80%	0.30%	0.77%
0.03%	-1.19%	0.08%	0.55%	1.55%	1.54%
1.57%	0.27%	0.35%	-2.18%	-2.55%	-1.00%
-0.81%	5.11%	-2.80%	-1.39%	0.22%	-0.71%
0.64%	2.82%	-0.71%	1.53%	0.30%	-0.27%
-0.63%	-0.43%	-2.70%	-0.56%	-1.49%	0.04%
0.48%	2.46%	1.12%	-0.31%	-0.23%	0.43%
-0.82%	-1.08%	-0.72%	-1.77%	-1.82%	-1.06%
-2.45%	0.52%	0.77%	-3.72%	-0.08%	-0.74%
-1.06%	0.21%	-1.38%	-3.06%	2.78%	-1.38%
0.54%	-0.33%	2.97%	3.23%	-0.15%	0.18%
0.67%	0.72%	0.59%	0.01%	0.45%	-0.84%
-2.08%	0.07%	-0.42%	0.40%	-0.90%	0.60%
0.87%	0.82%	1.87%	-0.49%	-2.11%	0.27%
-1.25%	-1.85%	-0.46%	3.08%	0.69%	-1.64%
-0.20%	1.45%	0.95%	-1.10%	2.30%	0.68%
0.37%	0.03%	0.55%	0.86%	-0.60%	-0.55%
-1.11%	0.40%	-0.16%	-2.05%	-1.28%	-0.69%
1.70%	-0.57%	1.00%	-0.15%	1.83%	0.80%
-0.01%	-0.51%	-1.34%	-1.47%	-0.75%	0.00%
1.29%	-0.08%	-2.47%	-2.69%	-1.66%	0.92%
0.16%	-0.17%	1.09%	1.19%	0.00%	0.57%
-1.33%	-0.76%	-0.03%	0.38%	-0.15%	-0.70%
1.27%	-0.92%	-2.20%	-0.69%	-0.31%	1.33%
0.20%	-0.48%	0.33%	0.48%	-0.08%	0.06%
-0.47%	-0.25%	-0.65%	0.34%	-0.39%	-0.57%
-1.84%	0.92%	-1.86%	-1.24%	-0.31%	-1.36%
0.48%	0.30%	0.92%	5.23%	0.16%	0.10%
0.76%	-1.66%	-0.86%	-2.30%	0.47%	0.46%
0.20%	-0.37%	0.09%	0.35%	2.09%	1.88%
-0.63%	-1.85%	0.41%	-1.05%	0.61%	-0.88%
0.75%	0.92%	0.16%	-0.21%	-1.28%	0.16%
0.32%	-0.42%	-0.05%	2.79%	0.84%	0.34%
0.25%	1.49%	-0.43%	0.40%	-1.44%	1.13%
-1.31%	-1.16%	-1.23%	1.29%	-0.54%	5.28%
0.22%	0.83%	-0.04%	7.84%	-0.46%	-0.92%
-0.23%	-0.68%	1.34%	1.64%	1.24%	-0.57%
-1.32%	-1.80%	0.24%	-0.46%	-2.07%	-0.52%
-5.76%	1.70%	0.38%	0.55%	0.00%	-0.52%
-0.32%	0.37%	0.63%	-2.15%	0.00%	0.58%
0.64%	-0.10%	-0.37%	0.97%	0.00%	-0.08%
0.86%	-0.73%	0.62%	0.39%	-2.03%	0.96%
-0.06%	-2.30%	1.04%	0.88%	-0.64%	-1.20%
-0.53%	2.09%	-1.48%	-2.47%	-2.41%	0.41%
1.07%	0.38%	-0.22%	1.79%	-1.32%	-0.17%
-0.22%	-1.04%	-0.80%	-0.23%	-0.83%	-0.72%
-0.34%	0.87%	0.08%	-0.44%	-0.67%	-0.47%
1.06%	-1.38%	-0.56%	0.88%	-1.35%	0.78%
0.00%	1.08%	0.75%	-0.07%	0.34%	0.06%
-0.05%	0.14%	1.69%	-0.23%	-1.97%	-0.69%
-1.30%	0.71%	-5.44%	0.85%	-2.35%	0.28%
-0.53%	-0.72%	1.11%	-0.88%	-1.43%	-0.01%
-0.16%	0.14%	0.49%	0.81%	-0.36%	-1.23%
0.22%	-0.06%	0.63%	-2.12%	-1.36%	-0.75%
-0.08%	-0.24%	2.62%	-0.10%	-3.04%	0.91%
1.21%	0.67%	1.45%	0.26%	-0.19%	-0.24%
0.46%	0.62%	-1.44%	-0.54%	3.90%	0.85%
0.05%	1.06%	-0.71%	-0.61%	3.30%	0.61%
-0.18%	1.21%	-0.10%	-2.42%	-0.35%	-0.10%
0.53%	-0.40%	-0.93%	-1.94%	0.71%	-0.01%
-0.23%	0.35%	1.50%	0.80%	-1.50%	3.65%
0.42%	-0.76%	-5.58%	-2.54%	0.90%	-0.99%
-0.29%	0.87%	0.90%	-0.06%	0.53%	0.75%
-0.64%	1.15%	-1.96%	-1.31%	0.00%	0.08%
0.16%	-1.54%	3.05%	0.35%	1.24%	-0.15%
-0.25%	0.56%	0.93%	10.15%	-0.61%	0.04%
-0.35%	0.86%	-1.21%	0.89%	0.09%	0.41%
0.41%	-1.95%	0.23%	7.55%	-0.44%	-0.08%
-1.06%	-2.20%	-1.96%	-2.29%	-1.06%	0.77%
-1.26%	2.27%	2.14%	-1.03%	-2.41%	-0.29%
1.44%	-1.30%	2.16%	7.17%	-0.37%	0.14%
0.02%	1.52%	-0.28%	1.78%	-1.28%	0.31%
0.71%	-1.03%	0.23%	-0.88%	2.23%	-0.26%
-0.77%	0.05%	0.69%	3.04%	1.82%	-0.80%
3.62%	1.94%	-0.34%	-0.56%	3.39%	0.32%
1.39%	-0.68%	-2.00%	-2.24%	-0.52%	0.10%
1.83%	-3.24%	-1.68%	-1.31%	0.17%	1.87%
2.52%	-1.84%	1.08%	0.69%	-1.99%	0.94%
-0.14%	-2.30%	0.30%	0.24%	-0.18%	-0.50%
-0.10%	-0.20%	-0.64%	-0.68%	-0.09%	-1.55%
-0.58%	0.98%	0.63%	1.73%	0.53%	-0.20%
0.22%	-0.45%	-0.16%	-3.45%	-0.26%	-0.12%
-1.19%	-0.71%	-0.26%	-2.47%	-1.50%	0.30%
0.30%	0.57%	-0.41%	-2.87%	-1.44%	0.35%
-0.06%	-1.15%	0.26%	4.61%	0.27%	0.66%
0.33%	-0.82%	1.14%	-1.24%	1.09%	-0.56%
0.89%	-2.97%	0.84%	0.29%	-2.07%	-0.70%
-0.41%	-0.42%	-1.13%	1.11%	0.18%	0.19%
-1.67%	-3.11%	2.46%	2.56%	-0.37%	-1.15%
-0.29%	1.96%	2.04%	2.65%	-1.38%	0.38%
0.29%	-1.81%	-1.04%	-2.57%	-0.47%	1.64%
-0.33%	-0.69%	-0.98%	0.80%	-1.69%	1.49%
0.33%	-2.01%	-2.39%	-0.90%	0.57%	-0.11%
0.90%	0.10%	-3.35%	-1.48%	3.60%	2.70%
2.20%	5.45%	1.47%	-2.29%	-0.09%	-2.07%
-1.39%	1.08%	-0.73%	8.31%	-1.46%	-0.82%
0.60%	-1.43%	0.95%	1.31%	-1.11%	1.14%
-1.67%	0.34%	0.43%	-1.16%	-1.31%	0.13%
1.55%	0.69%	0.23%	12.73%	1.81%	-3.20%
0.04%	-0.64%	-1.44%	-3.43%	1.40%	-0.76%
0.59%	2.33%	3.48%	1.99%	-1.20%	-2.06%
2.62%	-0.74%	-1.23%	-1.44%	-1.59%	0.74%

-0.54%	0.92%	-0.85%	1.03%	-0.66%	-1.29%
2.39%	-0.43%	2.23%	0.84%	-0.76%	1.18%
0.00%	-0.54%	-0.54%	5.29%	-0.19%	-0.60%
-0.70%	0.39%	1.06%	0.83%	-1.73%	0.79%
-1.99%	-0.76%	0.03%	2.10%	-3.92%	-0.91%
-0.03%	-0.39%	-1.20%	-1.59%	-3.59%	0.96%
-0.41%	-0.65%	0.48%	-2.72%	-2.33%	-0.25%
0.43%	-0.58%	0.70%	2.75%	-4.38%	0.28%
2.87%	2.00%	0.47%	0.78%	-1.59%	2.12%
0.86%	2.10%	-0.34%	4.12%	2.81%	-0.12%
0.82%	0.59%	-1.04%	-0.75%	-0.81%	-0.18%
-0.19%	-1.69%	-1.17%	-2.20%	-0.81%	0.11%
0.19%	-1.48%	-3.31%	-1.56%	-1.75%	0.37%
0.10%	-2.16%	1.28%	0.34%	-2.05%	-0.46%
-1.02%	0.59%	1.19%	0.55%	0.00%	-0.31%
1.95%	-0.05%	2.23%	1.10%	-0.41%	-0.18%
0.31%	0.58%	-5.07%	-4.10%	-1.14%	-0.38%
2.58%	1.09%	0.80%	-0.96%	1.11%	0.63%
0.22%	-0.70%	0.77%	0.24%	2.19%	0.64%
-0.70%	-0.41%	-3.08%	-0.72%	-1.34%	0.04%
1.14%	0.54%	0.71%	0.09%	8.83%	0.45%
1.26%	1.98%	2.19%	0.84%	-3.25%	-0.40%
0.04%	-1.88%	-2.53%	0.37%	0.13%	-0.12%
0.56%	0.81%	-0.56%	-1.40%	0.21%	-0.30%
1.26%	0.85%	0.06%	0.67%	1.46%	0.01%
-0.79%	-0.27%	-1.30%	-1.27%	1.39%	-0.33%
-1.25%	-3.63%	-0.76%	-1.12%	-1.04%	-0.01%
1.17%	-2.27%	0.28%	2.21%	0.25%	1.06%
-1.82%	1.04%	0.10%	0.08%	-0.88%	0.97%
-0.75%	1.44%	-0.92%	-2.00%	-2.97%	-1.35%
0.25%	-5.12%	-1.50%	-2.96%	-0.09%	-0.50%
-0.16%	3.60%	0.74%	2.06%	-0.09%	0.03%
0.97%	1.98%	3.16%	-1.52%	-0.13%	0.22%
-0.42%	-1.41%	-1.86%	-0.14%	1.40%	-0.26%
0.31%	0.14%	3.44%	1.28%	0.60%	-0.05%
-0.70%	-1.74%	1.03%	2.75%	0.47%	0.38%
1.36%	2.13%	1.38%	2.42%	0.38%	0.41%
0.86%	0.95%	-1.47%	-2.81%	0.68%	-0.27%
1.05%	2.45%	-1.72%	-0.10%	0.76%	0.81%
0.94%	-1.15%	-0.31%	-0.96%	0.46%	-0.34%
1.49%	0.13%	-0.55%	-4.90%	1.50%	-0.20%
-1.47%	-0.74%	2.46%	1.91%	5.35%	-1.21%
1.49%	-1.23%	-0.29%	0.83%	-0.39%	-0.68%
-3.86%	2.07%	2.32%	2.03%	-1.18%	-0.48%
-1.05%	3.10%	-0.05%	-1.86%	4.56%	0.00%
-0.39%	1.06%	-1.38%	-0.61%	-1.33%	0.21%
0.29%	-2.51%	-0.62%	-2.13%	-0.19%	-0.21%
1.16%	-3.76%	1.95%	0.73%	1.16%	0.00%
1.82%	-1.46%	0.54%	3.91%	-0.19%	0.97%
-1.50%	1.33%	-0.50%	-1.52%	-1.34%	0.62%
0.10%	-0.20%	-0.46%	-0.46%	-2.71%	0.00%
-0.19%	1.50%	0.58%	-2.64%	-1.69%	-2.79%
-0.10%	1.03%	-1.13%	-2.28%	-0.71%	-0.70%
1.91%	1.29%	-0.56%	-0.59%	2.85%	0.00%
-0.66%	2.17%	-3.56%	0.75%	0.20%	0.63%
-1.23%	0.95%	-0.81%	1.56%	0.59%	-0.70%
0.76%	-0.21%	1.45%	0.60%	-0.39%	-0.56%
-1.33%	-0.32%	-3.03%	-3.41%	0.99%	0.64%
-2.79%	-1.24%	1.71%	2.78%	3.13%	-1.55%
-0.99%	-0.61%	-0.47%	-0.80%	-4.36%	-1.00%
-1.12%	0.75%	-0.89%	-1.13%	-5.94%	-1.23%
3.86%	-4.40%	0.96%	-0.79%	-3.89%	2.27%
-4.65%	-1.15%	0.73%	-1.11%	-0.77%	-1.36%
0.65%	1.74%	0.79%	1.15%	-1.21%	1.38%
0.77%	-0.80%	-0.36%	0.22%	1.45%	1.43%
-1.77%	-1.00%	-0.10%	2.43%	-1.98%	-0.21%
1.23%	-0.09%	-0.89%	-0.70%	0.45%	-0.35%
-0.28%	-1.02%	1.42%	1.60%	-2.91%	0.78%
2.86%	-0.09%	0.81%	2.70%	2.07%	1.20%
-1.91%	-1.26%	0.41%	0.38%	0.11%	-4.59%
0.40%	4.41%	-0.41%	-1.26%	-0.56%	0.07%
-0.52%	-1.38%	-2.18%	-8.20%	1.59%	-0.80%
1.17%	1.71%	2.89%	-1.44%	1.00%	0.22%
-0.30%	0.53%	0.76%	1.94%	1.66%	-1.39%
1.99%	0.91%	1.10%	2.18%	1.74%	2.75%
-0.68%	-0.22%	2.34%	1.58%	-0.85%	-2.10%
0.00%	2.41%	1.79%	1.49%	-0.22%	0.30%
-1.08%	0.69%	1.19%	3.61%	2.05%	-1.55%
-2.45%	0.08%	-4.38%	-0.53%	-3.49%	-0.75%
0.41%	2.15%	-2.15%	-0.46%	0.77%	0.83%
0.73%	-0.46%	-1.06%	0.51%	-2.50%	1.05%
-0.04%	-0.85%	0.55%	1.76%	0.11%	-0.74%
1.39%	-1.46%	0.86%	1.07%	-1.56%	-0.22%
0.50%	1.69%	-1.57%	-0.98%	1.93%	0.22%
2.38%	0.65%	0.40%	1.07%	1.11%	0.60%
-2.51%	0.28%	-2.35%	-0.17%	0.33%	-0.59%
-0.79%	0.44%	-1.27%	-1.55%	1.64%	-0.22%
0.40%	0.82%	-3.09%	-3.52%	-1.29%	0.67%
-1.95%	-0.24%	2.94%	-3.60%	2.62%	-0.52%
0.57%	-0.42%	-0.44%	-1.99%	-2.02%	-0.07%
1.01%	1.35%	0.79%	0.76%	-4.67%	-0.97%
-0.88%	-1.21%	1.67%	0.39%	-2.73%	-0.97%
0.08%	1.80%	-3.11%	-2.02%	-1.99%	-0.53%
-0.36%	5.09%	0.09%	1.98%	-2.39%	-0.15%
1.27%	0.88%	-0.11%	0.61%	-4.04%	-1.67%
3.30%	1.30%	1.38%	-0.69%	1.02%	1.31%
-0.29%	-0.13%	-2.83%	-4.42%	-1.52%	-0.08%
0.58%	2.13%	0.54%	0.40%	1.67%	0.38%
-0.39%	-0.39%	1.31%	1.12%	1.89%	0.08%
-1.45%	-0.92%	-1.31%	-1.13%	1.24%	-0.91%
1.47%	0.36%	0.51%	-1.43%	-0.12%	2.00%
0.10%	1.44%	0.13%	-0.39%	0.49%	0.75%
2.51%	0.25%	2.59%	1.75%	3.05%	0.30%
-1.51%	1.53%	-0.22%	10.60%	1.18%	-1.04%
-1.72%	-0.11%	-0.17%	-0.97%	-1.52%	-0.38%
1.36%	0.95%	-0.56%	-0.42%	0.24%	0.45%
0.96%	-1.45%	0.43%	8.57%	-1.54%	0.15%
-1.33%	1.04%	0.84%	0.05%	0.36%	-0.38%
0.39%	-0.34%	-1.22%	-3.19%	-0.36%	0.15%
2.40%	0.86%	2.55%	2.45%	-0.72%	-0.30%
1.22%	-1.19%	1.37%	0.17%	0.48%	1.06%
0.00%	0.17%	0.27%	0.08%	0.36%	-1.27%
1.48%	-1.61%	-0.46%	-0.80%	-0.84%	0.15%
-0.18%	1.28%	1.31%	1.63%	-0.12%	-1.13%
0.27%	0.35%	-1.05%	2.50%	1.09%	0.08%
0.55%	0.11%	-1.00%	25.88%	0.72%	2.14%
1.73%	-1.04%	0.81%	6.17%	1.90%	3.21%
0.54%	-1.27%	-0.12%	1.44%	-0.47%	-1.38%
2.04%	1.13%	1.04%	-1.06%	-2.46%	1.10%
-0.61%	-0.98%	-0.04%	0.33%	1.32%	0.22%
0.09%	-1.48%	1.64%	8.15%	1.54%	0.80%
3.15%	0.63%	1.01%	-2.09%	-2.57%	0.14%
-2.71%	1.39%	0.51%	-0.70%	2.88%	1.15%
0.44%	-0.46%	-0.51%	2.45%	0.93%	-0.78%
0.95%	-0.24%	-0.05%	6.92%	2.43%	0.64%

-1,38%	-1,21%	-0,20%	2,07%	0,00%	-1,71%
0,78%	1,68%	1,24%	0,92%	-1,47%	0,22%
-1,38%	-0,84%	1,23%	0,82%	0,34%	-0,58%
0,00%	-1,19%	-1,78%	-0,09%	7,76%	-0,36%
0,44%	0,65%	0,65%	3,36%	-3,92%	0,07%
1,22%	-1,66%	-1,20%	1,09%	-2,76%	0,15%
0,17%	-0,84%	-0,21%	2,41%	-2,04%	1,38%
-0,26%	-1,28%	-0,47%	3,67%	-1,16%	-1,72%
1,04%	-0,87%	1,25%	0,32%	1,29%	0,00%
2,99%	1,34%	-1,73%	1,46%	0,23%	0,80%
1,66%	0,06%	1,05%	2,11%	0,35%	-0,51%
-2,12%	-0,46%	-1,12%	-0,32%	1,84%	-1,75%
-2,09%	0,00%	-0,78%	2,64%	1,58%	0,67%
0,77%	2,39%	1,31%	-2,39%	0,67%	-0,15%
-0,42%	1,17%	-1,26%	-4,29%	-1,77%	0,22%
0,51%	2,19%	2,79%	0,78%	-3,82%	0,66%
0,59%	-0,07%	-4,54%	-1,32%	-1,87%	0,88%
1,68%	0,50%	3,06%	2,75%	0,00%	0,58%
-0,99%	0,43%	-0,90%	-1,39%	4,29%	-1,22%
0,83%	-0,36%	5,66%	2,96%	-1,03%	0,29%
1,49%	-0,15%	0,45%	-2,18%	0,35%	1,23%
-0,24%	1,60%	-1,15%	0,55%	-0,92%	0,65%
0,57%	1,24%	-0,16%	0,12%	0,12%	0,64%
0,97%	-0,39%	-0,57%	11,23%	-2,78%	1,20%
-1,13%	-0,34%	0,65%	-3,93%	-1,31%	-0,35%
-1,79%	-0,33%	0,92%	-1,41%	2,42%	-1,47%
-0,75%	-1,21%	-1,76%	-2,96%	3,30%	-0,21%
1,42%	5,62%	0,84%	-2,15%	2,74%	0,29%
-0,35%	-1,36%	-0,19%	-2,95%	-0,67%	-0,21%
-1,32%	-2,06%	0,85%	4,24%	-0,11%	1,07%
-1,67%	-1,29%	-0,72%	-0,99%	1,01%	-3,11%
0,85%	0,61%	0,74%	1,84%	1,66%	0,51%
-0,51%	-1,00%	0,65%	-0,77%	-1,09%	-1,38%
-1,70%	-2,37%	0,11%	2,90%	1,87%	-13,09%
0,86%	3,03%	1,01%	-0,17%	-0,76%	0,34%
-0,68%	-1,23%	0,91%	-0,81%	-0,22%	-2,95%
3,53%	0,62%	0,19%	-0,25%	-2,62%	-1,91%
1,75%	1,34%	1,33%	-0,34%	-2,69%	-2,04%
0,41%	0,25%	-0,49%	1,90%	1,96%	4,25%
1,30%	-1,67%	0,40%	0,34%	1,58%	0,69%
0,48%	0,78%	-1,99%	0,41%	-2,34%	0,17%
1,36%	-0,05%	1,82%	4,27%	0,23%	-0,43%
-0,71%	-0,08%	0,47%	-0,26%	2,39%	-0,35%
3,18%	-0,52%	0,46%	0,42%	-3,44%	0,43%
-1,39%	-0,18%	-0,42%	-0,66%	1,73%	-1,12%
0,94%	-0,23%	0,92%	1,13%	-0,23%	0,35%
2,01%	-0,61%	0,32%	-0,09%	-2,04%	-0,26%
1,37%	0,73%	1,24%	1,96%	-2,31%	2,62%
-2,69%	0,10%	0,96%	0,31%	1,07%	1,02%
1,15%	1,09%	-0,73%	-6,87%	1,29%	-0,25%
0,30%	-2,22%	0,36%	-3,48%	0,81%	1,01%
-0,38%	-1,75%	1,89%	-1,80%	0,46%	1,59%
2,13%	0,88%	-0,28%	3,70%	-3,54%	-0,99%
0,07%	-1,37%	1,17%	22,27%	0,12%	0,75%
0,07%	-1,82%	0,11%	-2,07%	0,12%	0,66%
0,00%	1,96%	-0,60%	5,40%	0,83%	-1,47%
-1,12%	0,14%	-0,75%	-0,38%	-0,23%	-0,25%
2,18%	3,39%	0,07%	-2,49%	-0,47%	-0,67%
-0,44%	0,19%	0,29%	2,41%	1,53%	0,67%
-0,22%	-0,50%	-0,39%	1,91%	-1,05%	0,42%
2,15%	-1,06%	-0,01%	-0,73%	1,76%	1,16%
-1,52%	-1,21%	1,29%	7,81%	1,50%	-0,16%
1,18%	1,46%	-0,72%	-2,13%	-1,71%	0,41%
1,02%	1,86%	0,69%	-1,12%	-0,12%	0,41%
2,74%	0,22%	0,24%	-1,02%	-5,33%	-1,06%
3,58%	0,19%	-0,97%	2,79%	-0,61%	-1,40%
-1,08%	0,18%	-0,51%	1,21%	-1,48%	-0,83%
-1,37%	1,94%	0,84%	1,38%	-1,00%	-1,01%
-0,21%	-0,04%	0,39%	2,46%	-1,64%	0,85%
0,07%	-0,24%	-0,43%	-0,61%	-3,21%	-1,01%
1,74%	0,24%	0,23%	0,63%	-0,27%	-0,43%
1,03%	-3,93%	0,53%	-0,58%	-0,53%	0,94%
1,76%	0,88%	0,66%	3,54%	-4,28%	-1,10%
-0,80%	-5,25%	-0,42%	2,03%	-0,42%	0,17%
0,13%	-0,66%	-2,41%	0,93%	-3,51%	-0,09%
-1,47%	-1,01%	0,51%	3,72%	1,16%	1,28%
2,79%	0,33%	-0,93%	-1,82%	-0,29%	-1,94%
1,26%	3,87%	1,82%	-0,24%	3,03%	0,26%
-0,20%	1,63%	0,46%	0,61%	1,82%	-3,01%
-0,20%	-1,57%	-0,14%	2,01%	-0,82%	3,10%
0,26%	-1,45%	1,33%	1,60%	-0,28%	-3,35%
-0,46%	0,05%	0,39%	-3,92%	0,00%	-1,78%
-1,12%	1,14%	-0,50%	3,54%	0,83%	-0,18%
1,13%	-3,14%	-0,39%	-0,18%	-2,20%	0,36%
-0,46%	0,14%	-1,71%	-5,42%	0,00%	-0,45%
0,46%	-2,66%	2,12%	4,77%	0,14%	0,82%
-0,53%	1,57%	0,16%	-3,06%	-1,69%	-4,77%
0,59%	6,83%	-0,04%	-2,00%	-1,14%	1,99%
-0,07%	3,35%	0,73%	-1,87%	-2,03%	0,19%
-0,26%	0,19%	0,21%	2,58%	-3,10%	0,09%
-0,53%	-1,08%	1,05%	0,62%	-3,81%	0,19%
0,53%	0,51%	0,89%	-0,86%	-1,74%	0,83%
-0,39%	0,21%	1,16%	-0,41%	-6,13%	-2,47%
-1,72%	0,54%	0,93%	1,54%	-3,78%	3,19%
0,34%	2,26%	0,85%	-1,75%	2,86%	-1,82%
1,21%	1,71%	0,44%	-4,26%	0,69%	-5,93%
-0,66%	-1,63%	-0,54%	1,19%	0,00%	-0,89%
-2,00%	-0,40%	-3,28%	-3,17%	-0,52%	-0,20%
-1,02%	-1,21%	-0,44%	0,53%	0,35%	3,69%
-0,34%	0,33%	-1,45%	-5,62%	-1,04%	-0,38%
0,62%	0,99%	-0,97%	0,20%	1,40%	1,16%
-0,89%	-0,94%	-2,99%	-4,16%	-2,07%	-2,76%
-1,66%	0,15%	-1,43%	0,69%	-17,75%	-0,59%
-2,11%	0,34%	2,52%	1,75%	-9,83%	-1,08%
-3,59%	0,73%	-1,38%	-0,13%	-2,13%	-0,58%
-0,15%	-0,32%	3,62%	5,68%	-3,34%	1,28%
-4,93%	-1,63%	1,49%	-0,54%	-6,81%	-1,31%
-0,71%	0,90%	-1,93%	-1,30%	0,54%	-0,40%
5,61%	1,97%	-2,04%	-4,49%	-1,82%	1,93%
-1,27%	-0,46%	0,46%	3,38%	5,66%	-0,49%
4,78%	0,50%	-0,25%	-0,36%	0,72%	1,19%
1,09%	-0,94%	-1,38%	-2,70%	-3,28%	0,79%
2,43%	-1,92%	0,95%	-2,57%	-3,70%	0,39%
0,56%	2,51%	-1,31%	-2,91%	3,30%	-0,10%
-0,35%	-2,21%	0,20%	-0,16%	1,60%	-0,87%
-3,00%	0,86%	2,90%	1,77%	-0,31%	-0,20%
2,88%	5,89%	1,89%	4,55%	-0,63%	2,06%
-0,56%	-1,74%	0,98%	5,23%	-1,90%	2,98%
0,35%	-2,37%	0,33%	3,47%	-3,56%	-0,19%
0,84%	-0,34%	-2,15%	-0,46%	-3,69%	1,78%
0,07%	-4,77%	0,36%	0,42%	-2,55%	-1,65%
0,56%	0,10%	2,41%	13,40%	-5,71%	2,52%
1,93%	1,52%	1,22%	0,43%	4,17%	4,83%
-1,76%	0,94%	0,31%	-5,66%	5,21%	0,00%
0,41%	-6,89%	-1,24%	-7,45%	4,61%	-1,22%

0.27%	2.05%	-3.20%	-1.19%	-7.38%	-0.18%
0.21%	7.84%	-0.54%	-4.46%	-1.90%	0.53%
-0.07%	-1.98%	1.08%	0.74%	2.79%	-0.26%
-0.68%	-5.94%	2.21%	-2.99%	-0.71%	-0.26%
-3.10%	2.61%	-3.38%	-10.21%	0.12%	-0.71%
-1.49%	3.45%	2.32%	0.48%	-0.12%	0.44%
-2.24%	2.35%	1.81%	1.70%	-0.24%	-0.88%
-2.88%	-3.86%	1.95%	-1.11%	-1.67%	0.09%
-2.13%	-0.04%	1.03%	0.92%	-0.97%	0.71%
-1.16%	-1.52%	0.75%	1.16%	-0.37%	-1.77%
-2.20%	1.30%	-0.78%	2.51%	-1.35%	-3.78%
0.24%	1.60%	1.26%	-3.14%	-2.36%	3.18%
-1.44%	-4.44%	1.18%	3.17%	-3.06%	0.18%
0.89%	2.01%	0.69%	3.45%	-0.13%	1.18%
0.00%	-0.73%	-2.33%	-10.15%	-1.05%	-0.81%
-1.45%	-1.18%	0.51%	0.81%	-2.39%	-0.18%
0.57%	0.32%	-12.30%	-5.35%	1.23%	2.53%
0.81%	-0.94%	4.34%	1.37%	-0.54%	0.00%
-1.69%	0.34%	1.03%	3.05%	0.81%	-2.38%
1.89%	0.33%	-0.49%	2.49%	-0.27%	0.45%
9.25%	-0.48%	0.91%	0.03%	3.77%	1.26%
-2.14%	1.69%	-2.22%	-4.62%	2.46%	-1.33%
-0.53%	5.15%	-2.54%	-2.95%	-1.90%	-0.99%
0.91%	-1.65%	0.99%	-1.80%	-10.32%	-0.27%
1.72%	0.17%	-1.59%	-1.40%	-2.55%	-0.82%
0.15%	1.83%	-3.38%	-7.23%	1.55%	1.65%
4.56%	-0.75%	0.59%	-1.54%	-4.82%	0.45%
0.91%	-0.06%	-1.92%	-2.90%	2.10%	1.26%
-0.56%	1.99%	5.55%	8.03%	1.57%	-0.89%
-0.56%	-1.35%	2.40%	-1.19%	-3.10%	-1.43%
-0.49%	0.84%	-1.06%	0.97%	0.00%	-0.27%
0.50%	-0.15%	1.65%	1.79%	-5.90%	0.09%
-2.19%	1.31%	-0.42%	-1.42%	-7.18%	-1.09%
-0.58%	0.85%	-2.21%	-11.00%	-0.28%	-0.37%
-1.02%	-1.60%	-0.01%	5.78%	-1.27%	-1.11%
0.07%	0.79%	-0.47%	4.59%	0.57%	1.03%
2.27%	-0.71%	3.17%	3.95%	2.98%	2.59%
-1.93%	1.27%	0.85%	0.61%	-1.79%	1.44%
3.28%	-1.67%	0.91%	0.10%	0.14%	0.44%
2.61%	0.20%	0.98%	-2.17%	-1.26%	-2.04%
2.20%	-0.11%	-0.41%	-2.80%	-0.57%	1.72%
0.81%	0.98%	3.65%	3.85%	15.00%	2.13%
-1.07%	5.62%	1.44%	4.20%	-3.60%	-0.52%
0.00%	0.82%	-1.69%	4.09%	4.38%	-1.05%
-0.20%	-0.44%	1.10%	2.19%	1.85%	-1.24%
1.22%	-0.58%	-0.76%	-3.36%	-1.21%	-0.72%
0.20%	-0.84%	0.29%	-0.93%	3.80%	0.72%
-0.27%	-0.55%	1.85%	2.04%	-4.37%	-0.09%
0.60%	1.88%	0.39%	3.44%	-3.34%	1.08%
3.66%	-0.22%	-0.90%	-1.97%	1.02%	0.27%
1.09%	0.54%	0.07%	-3.48%	-4.56%	2.03%
1.52%	1.15%	0.68%	2.18%	0.93%	-1.47%
-0.94%	0.47%	1.02%	3.26%	-0.92%	1.50%
-0.82%	-0.19%	-0.46%	-0.20%	-1.86%	1.47%
0.00%	-0.92%	-0.01%	0.59%	0.68%	-0.60%
0.06%	2.59%	0.42%	-0.47%	-2.55%	1.98%
-0.25%	-1.29%	-0.04%	-1.69%	1.93%	-0.25%
0.96%	0.98%	-1.14%	-3.25%	-0.14%	0.08%
-0.88%	0.77%	1.30%	1.39%	1.62%	0.17%
3.44%	-1.18%	0.16%	4.51%	-0.80%	0.59%
1.11%	-0.35%	0.60%	2.38%	2.95%	1.42%
0.67%	1.93%	0.49%	1.35%	1.17%	0.08%
-0.79%	1.48%	-1.02%	-4.59%	3.74%	-0.66%
-0.73%	0.86%	1.16%	3.61%	-5.47%	-2.16%
0.98%	-0.24%	1.14%	1.54%	1.05%	1.02%
0.30%	-1.64%	0.47%	-0.95%	-1.69%	-0.17%
-1.76%	-0.66%	0.61%	0.55%	0.93%	-0.76%
-4.32%	1.50%	2.12%	-1.23%	-1.57%	0.51%
-0.19%	0.52%	0.54%	4.01%	-3.06%	-0.08%
-0.06%	-0.89%	-2.22%	-4.76%	0.00%	1.01%
0.13%	-1.24%	-0.46%	2.46%	0.69%	0.00%
-0.32%	0.67%	-0.37%	-0.82%	-0.14%	0.17%
-0.52%	-0.05%	1.60%	10.78%	0.41%	-0.33%
-1.30%	0.05%	-0.65%	-3.49%	-0.95%	0.84%
-0.79%	-1.75%	1.10%	-0.80%	0.55%	-0.75%
1.53%	0.11%	-2.56%	-3.86%	-0.82%	2.01%
-2.30%	0.83%	3.02%	0.09%	0.55%	-3.04%
0.67%	0.78%	-0.51%	-1.92%	1.51%	0.42%
0.80%	0.79%	0.17%	1.37%	7.29%	0.34%
1.26%	1.41%	1.10%	0.33%	-3.40%	0.25%
1.37%	2.24%	-0.64%	-0.13%	-2.34%	0.75%
-0.26%	4.86%	1.13%	-3.26%	-0.80%	-1.08%
0.06%	-5.33%	-0.06%	1.46%	0.94%	0.08%
-1.42%	0.29%	-0.79%	-0.78%	1.20%	-0.92%
1.70%	-0.02%	0.36%	2.11%	0.79%	1.02%
-0.19%	0.65%	-1.68%	1.65%	-0.78%	1.09%
0.84%	0.04%	2.42%	4.14%	2.63%	-0.66%
-0.19%	2.21%	-1.33%	-3.88%	-2.69%	0.08%
0.90%	1.20%	0.21%	-0.27%	-1.84%	0.42%
0.13%	0.12%	1.03%	-0.23%	-0.13%	-1.08%
0.44%	-1.52%	-0.28%	-5.13%	1.08%	0.76%
-2.08%	-1.00%	0.97%	1.94%	2.66%	-0.92%
0.26%	-1.74%	0.43%	-4.87%	-4.02%	0.59%
-1.35%	1.42%	-0.07%	0.10%	-1.62%	-0.67%
1.30%	-0.09%	0.69%	-0.35%	-0.55%	0.51%
0.77%	0.33%	-0.46%	1.15%	-0.41%	0.42%
0.51%	2.41%	-2.01%	-0.45%	-0.14%	0.92%
2.16%	-0.81%	-0.39%	1.95%	0.69%	-0.17%
-7.34%	-2.96%	-0.20%	-0.74%	-2.07%	1.91%
0.60%	-0.17%	-0.21%	0.96%	1.13%	-0.89%
-0.40%	-2.99%	0.66%	4.97%	-0.42%	0.49%
-1.01%	-1.24%	0.27%	-0.72%	-0.14%	0.65%
-1.62%	5.75%	-0.08%	-0.39%	-0.14%	-1.87%
1.79%	-1.02%	0.85%	0.10%	0.00%	-0.66%
-0.07%	0.25%	-2.01%	-1.37%	0.28%	-1.75%
1.89%	3.17%	-3.47%	-11.28%	0.70%	0.68%
-3.92%	-0.13%	1.27%	-2.27%	2.77%	-0.76%
-1.31%	2.53%	0.86%	-4.26%	-1.21%	2.29%
6.58%	-0.17%	1.12%	3.21%	1.64%	-0.33%
2.17%	-0.08%	-0.85%	1.93%	-1.64%	-0.50%
3.60%	-0.50%	-0.14%	2.03%	-1.25%	1.59%
0.06%	-0.42%	2.25%	3.17%	0.00%	-0.25%
-0.06%	1.43%	-1.16%	0.15%	-0.56%	0.66%
2.36%	0.67%	1.14%	-1.87%	-0.42%	-3.11%
1.27%	-2.00%	-0.68%	-1.54%	0.43%	2.37%
0.78%	0.44%	1.35%	-11.67%	2.12%	-0.17%
2.55%	0.33%	0.85%	-11.38%	1.94%	-0.58%
1.39%	-0.71%	0.32%	8.07%	-0.68%	2.91%
0.06%	0.74%	-1.81%	1.88%	1.23%	2.34%
-1.14%	1.87%	0.58%	-0.74%	5.80%	-4.11%
0.75%		-0.09%	-0.40%	-3.06%	1.89%
2.12%		0.01%	-2.72%	3.82%	-1.13%
-1.40%		-1.63%	-7.94%	2.15%	1.55%
-0.91%		0.53%	4.73%	17.12%	0.89%
-1.44%		1.06%	-2.13%	17.80%	-0.64%

1,34%	0,56%	0,33%	-1,62%	-0,16%
-0,17%	0,51%	-3,70%	3,29%	0,08%
-0,86%	-1,23%	0,25%	-0,71%	-0,56%
0,76%	1,16%	2,72%	-0,18%	0,89%
2,94%	0,41%	-1,85%	1,43%	0,32%
0,06%	-0,80%	-1,36%	-7,22%	0,96%
-0,78%	-0,44%	2,59%	-3,80%	-0,24%
-0,51%	-1,22%	-2,43%	4,14%	0,16%
0,85%	-0,29%	-1,48%	-2,08%	0,00%
-0,73%	0,51%	2,58%	-0,19%	-1,50%
-0,11%	3,62%	-4,53%	0,97%	0,40%
-0,28%	0,67%	-1,04%	-0,58%	-0,16%
-0,51%	2,83%	3,93%	1,35%	-0,16%
-3,78%	0,82%	4,25%	0,00%	-0,88%
2,08%	1,96%	1,78%	-6,19%	0,64%
-1,86%	0,12%	5,54%	5,18%	0,40%
0,42%	0,37%	-2,72%	-1,16%	0,00%
-0,95%	0,31%	1,10%	0,00%	-1,03%
2,45%	1,62%	-0,46%	-0,98%	0,00%
-0,41%	-0,98%	0,45%	-3,45%	0,40%
1,70%	0,15%	-0,11%	0,00%	0,80%
1,78%	0,34%	2,61%	1,33%	-0,40%
1,64%	0,14%	5,39%	0,60%	0,48%
-0,50%	1,96%	0,02%	-2,40%	0,95%
0,06%	-1,81%	2,51%	-2,67%	-0,16%
0,89%	-0,23%	-1,88%	0,74%	0,63%
4,43%	-0,24%	-1,67%	0,63%	-0,47%
-5,51%	0,59%	2,51%	-0,94%	-0,63%
0,06%	-0,50%	0,83%	-3,68%	-0,16%
-2,58%	0,96%	2,30%	-2,18%	0,48%
0,35%	1,60%	-2,68%	0,33%	-0,95%
-1,09%			-0,44%	-0,40%
-2,20%			-1,67%	-0,96%
0,00%			4,65%	1,37%
2,85%			2,71%	1,59%
			-2,75%	
			-2,71%	
			-1,56%	
			2,61%	
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SUMMARY

In recent years, there has been a significant upsurge in both the volume and scale of M&A transactions, a trend that gained even more momentum during the pandemic period following the Covid-19 outbreak, due to the consolidation processes that companies have undertaken. Consequently, there has been a notable increase in professional and academic interest in M&As, driven by the myriad benefits that these transactions can generate.

In lights of these developments, the purpose of this Master's thesis is to ascertain whether or not real option-based models can be a valid tool for determining the value of synergies in an M&A deal, trying to reply to the following research question: "Can real options serve as a suitable valuation approach for assessing M&A synergies in uncertain deal-making environments?".

Indeed, given the inherent uncertainty surrounding synergies in M&A deals, conventional valuation methods like the Discounted Cash Flow (DCF) approach and the multiples method have their limitations. They struggle to fully capture the intrinsic value of M&A synergies because they do not account for the elements of uncertainty. Therefore, recent literature advocates for the adoption of the real option valuation method when assessing M&A synergies due to its capacity to encompass both the risks and benefits associated with uncertain deal dynamics.

In order to do this, in the first chapter, the basic concepts of merger and acquisition transactions are covered aiming to offer a comprehensive insight into M&As. This chapter begins by defining mergers and acquisitions, delving into the various classifications into which such deals can be distinguished. Additionally, it stresses the main stages constituting the M&A deal cycle. These phases encompass critical factors such as strategic planning, target screening, due diligence, transaction execution, and post-acquisition integration process. Furthermore, this chapter analyses the underlying business motivations driving M&A transactions while also dissecting the many benefits these deals bring to firms' growth.

Moreover, the first chapter elucidates how M&A activities enable companies to swiftly bolster their resources and capabilities, thereby strengthening their competitive positioning. The primary incentives for embarking on M&A ventures are also explored, including market expansion, the pursuit of economies of scale and scope, vertical integration, access to vital resources and technological expertise, enhancement of the market influence, diversification, managerial motivations, and the establishment of a tax-efficient organizational structure. Particular emphasis is placed on the creation of operational and financial synergies, often serving as the dominant impetus behind M&A endeavours.

In the second chapter, it gets into the heart of the thesis by delving into the primary methodologies employed to gauge the value of an M&A deal. For the purpose of this thesis, according to the approach proposed by A. Damodaran, corporate finance and valuation Professor at the NYU Stern School of Business, the value of an M&A transaction is conceived as the sum of the stand-alone value of the target firm, the synergy value, and the value of change in control. Therefore, the three main approaches to stand-

alone corporate valuation are first analysed in this chapter: income approach, market approach, and asset approach. Following that, this chapter provides a comprehensive breakdown of the key methods employed in company valuation. These encompass the DCF model, relative valuation (comprising the Guideline Public Company method and the Transaction Multiple method), providing an in-depth description on valuation with real options and related real-option based valuation models. Lastly, attention is shifted to the evaluation techniques of synergies (including valuation through real options) and change in corporate control. The insights presented in this chapter establish a foundation understanding of M&A transaction assessment, setting the stage for the subsequent analysis of the case study featured in Chapter III.

The last chapter of this Master's thesis embarks on a practical case study about M&A deals valuation, offering a detailed analysis of an actual and significant transaction. Specifically, this concluding chapter scrutinizes the quantification of M&A synergies, employing the real options approach to capture all the dynamic essence of this critical element in deal valuation. For this purpose, EssilorLuxottica's acquisition of GrandVision, a transaction unveiled in July 2019 and finalized in 2021, is chosen as case study. This choice is grounded in two primary considerations: firstly, the transaction's status as one of the most prominent deals in recent years, and secondly, its suitability for assessing the synergies arising from the acquisition through the real option approach.

Therefore, this chapter first provides a description of the two sides involved in the deal, the buyer (EssilorLuxottica) and the seller (GrandVision), along with a presentation of the transaction, including arbitration process, antitrust approvals, and an overview of the eyewear and eyecare market. It then goes on to analyse the rationales behind the acquisition initiative and the synergies that could be generated by such deal, identifying five principal synergy groups: vertical integration, market power increase in Europe for EssilorLuxottica, access to critical resources and know-how, supply chain optimisation and sourcing savings, and G&A (general and administrative) expenses rationalization.

Once all the main features of the transaction analysed have been discussed, the thesis moves on to the evaluation of the M&A deal, which is composed of two parts, considering that the value of change in corporate control has been intentionally omitted in the case study assessment process. This decision is rooted in EssilorLuxottica's declaration of its deep appreciation for the performance of GrandVision's management team. Indeed, the acquiring company explicitly expressed its intention to retain the existing CEO and CFO of GrandVision even after the acquisition's completion. Consequently, the valuation of the acquisition examined by the case study consists of the remaining two parts: the stand-alone target firm valuation and the assessment of the synergy value.

The first of these two portions is evaluated using the traditional methods of DCF and GPC (multiples). Based on the made assumptions, this part of the valuation returns a stand-alone company value for GrandVision equal to approximately € 6.9 billion and, consequently, and equity value of € 5.6 billion.

On the other side, the valuation of synergies is carried out adopting a real-option based model, which among various methodologies is the most suitable for capturing the full dynamic nature of this component

of value. Specifically, the method outlined by Datar, Mathews and Johnson in their paper "A Practical Method for Valuing Real Options: The Boeing Approach" is adopted.

In contrast to the Net Present Value (NPV) approach, the Datar-Mathews model revolves around exploring different scenarios that reflect diverse market conditions and potential M&A outcomes. Thus, unlike NPV, the real option analysis through the DM method captures the value inherent in adaptability and the uncertainties associated with M&A synergies. This methodology commences by establishing estimates for the stand-alone values of revenues and costs for both the buyer and the seller. These values are then aggregated to obtain the baseline values for the company when not combined, representing a scenario devoid of synergies. Subsequently, the evaluation process delves into the various types of synergies arising from the specific transactions, each of which influences a specific value driver. The final stage of this methodology involves subtracting the baseline forecasts without synergies from the combined firm estimates. This step allows to ascertain the cash flows resulting from revenue-enhancing and cost-reducing synergies for each scenario. At this juncture, the utilization of Monte Carlo simulation is instrumental in determining the value of the real options representing the synergies. In particular, it is started one simulation of 10 thousand iterations that delivers a real option value (ROV) of almost € 2.3 billion. From this value, using the formula proposed by Datar and Mathews, it is obtained a value of synergies equal to € 2.0 billion. Therefore, when the target stand-alone value is added, it culminates in an acquisition cost that EssilorLuxottica should have paid to acquire GrandVision equal to € 7.6 billion.

While the obtained results slightly differ from the actual acquisition price, they unequivocally answer the research question proposed. In fact, through the findings of this thesis it can be demonstrated the absolute validity of the real options approach when evaluation M&A synergies. As a result, this Master's thesis holds significant implication for managerial decision-making.

Often, managers harbour reservations when it comes to employing real option methods for assessing synergies, favouring more traditional methods. This hesitation may arise from several factors, such as the requirement of advanced simulation and software capabilities or the lack of awareness among certain managers regarding real options. However, the outcomes of this thesis challenge these beliefs, demonstrating that real-option based models – especially the DM model – can serve as ideal alternatives to conventional methods when evaluating synergies arising from M&A transactions.

Hence, it can be affirmed that the real options approach provide efficient support in the perspective of both buyer and seller. Indeed, the purchaser can base its offer on a more precise and extended method, while similarly, in the target firm's context, ROV can be advantageous during negotiations. In this light, the real options approach could be seen as a complementary approach to traditional evaluation methods when valuing synergies, enhancing to reach the most reasonable estimation of the transaction's consideration.

In order to delve deeper into this research field, it would be intriguing to evaluate also other types of synergies, including financial ones, while employing tailored real option models for each specific synergy

group. Furthermore, an expanded exploration of the use of real options in the context of M&A could involve a comparative analysis across multiple case studies, identifying whether real options approach holds consistent merit across diverse scenarios, industries, and company sizes.